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Oki Data CONFIDENTIAL

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4

S9800 Scanner Maintenance Manual ODA/OEL/AOS

[Rev. 3]

3

Related drawings

2

Drawing No.	Name	note
42960901TL	S9800 Scanner Disassembly for Maintenance	non-RoHS
42960901TR	S9800 Scanner RSPL	non-RoHS
42960911TL	S9800 Scanner Disassembly for Maintenance (RoHS)	RoHS
42960911TR	S9800 Scanner RSPL (RoHS)	RoHS

1

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Approval		Design		Name S9800 Scanner Maintenance Manual	
Hideki Enomoto		Hidenori Ueda			
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Hidenori Ueda					
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1. OVERVIEW

- 1.1 Related Drawings
- 1.2 General notes for servicing
- 1.3 Product Specifications
- 1.4 Device Configuration
- 1.5 Theory of Operation

This manual is intended to be used by the maintenance engineers. It describes the areas to be maintained, the installation, the disassembly, and the main trouble shooting guides.

Please take your time to read this manual thoroughly to obtain comprehensive knowledge about the S9800 before serving the unit.

1.1 Related Drawings

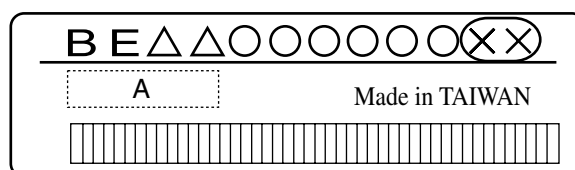
The last two characters of the serial number label of the rear of each scanner (see the following figure) should be checked.

A0 (non-RoHS):
Related Drawings

42960901TR	S9800 Scanner RSPL
42960901TL	S9800 Scanner Disassembly for Maintenance

B0 (RoHS):
Related Drawings

42960911TR	S9800 Scanner RSPL (RoHS)
42960911TL	S9800 Scanner Disassembly for Maintenance (RoHS)



Serial Number Label

1.2 General notes for servicing

- (1) Before trying to disassemble the S9800, make sure the power supply cord of the S9800 is disconnected from the power outlet. Under any circumstance, do not remove or install the connectors on the S9800 with the power supply turned ON.
- (2) Use caution not to drop small parts or screws inside the unit when disassembling and reassembling. If left inside, they might cause the malfunction of the unit.
- (3) Do not pull the connector cable when disconnecting it. Hold the connector.
- (4) When carrying the scanning head unit, put it in an anti-static bag.
- (5) Keep the document table glass surface always clean. If contaminated, use a dry clean cloth for cleaning.
- (6) Use caution not to injure your fingers or hands when disassembling or reassembling the unit.

1.3 Product Specifications

The S9800 is designed to meet the following product specifications:

Table 1-1 Product Specifications

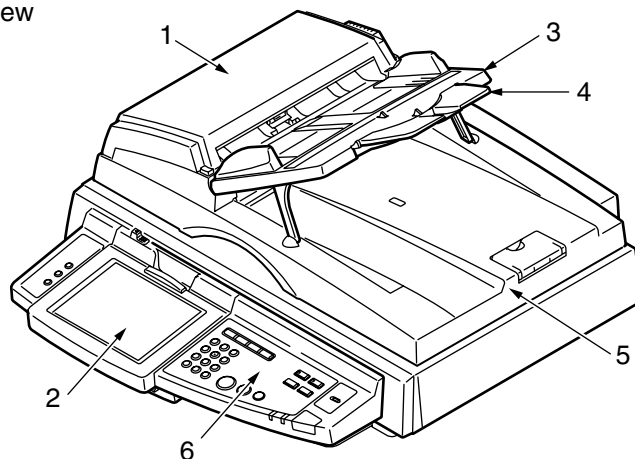
System Overview	
Dimension (mm)	671.94 (W) × 692.71 (D) × 389.68 (H)
Weight	14.4Kg (without ADF)
Scanning Speed (ADF)	35ppm/48ipm (300dpi greyscale/A4/LEF) ppm: pages per minute /ipm: image per minute
Warm-up time (scanner)	Within 30 seconds
Optical Resolution	600dpi
Imaging depth(input)	16bit per color, 8bit greyscale
Image processor (O2) RAM	128MB
ADF Pad Life (scanner)	100,000 scan pages
ADF Roller Life (scanner)	200,000 scan pages
Imaging depth(input)	16bit per color, 8bit greyscale
Imaging depth(output)	8bit per color, 8bit greyscale
Image modes(mono)	Line art, halftone, error diffusion (single bit)
Image modes(color)	24bit color
Scan control Core CPU	75MHz ARM 946E
Scan data bus width	8bit
Image processor (O2) core	75MHz
Image processor (O2) RAM	128MB
MTTR	< 30 min
Scan (FB) life ADF life	F/B: 200,000 scan pages; ADF: 800,000 scan pages
Scanner duty	ADF:80% F/B: 20%
MTBF	ADF: 5000 hours F/B: 5000 hours
Daily duty cycle	2,500 pages per daily
ADF	
Scanning area	11.8" × 17"
Document input thickness	16 ~ 28lb.
Weight	8.6Kg

1.4 Device Configuration

This section describes the device configuration of the multifunction product.

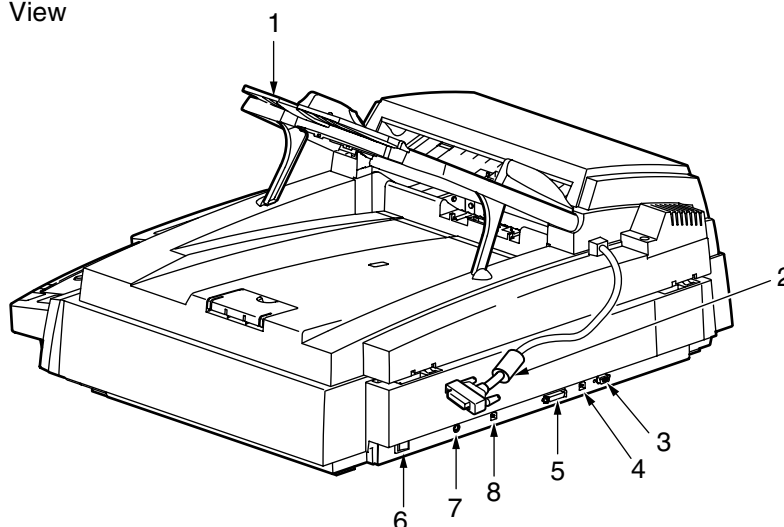
1.4.1 External View

1.4.1.1 The Front View



- | | |
|--------------------|----------------------|
| 1. ADF Front Cover | 4. ADF Paper Support |
| 2. LCD-display | 5. Document(s) Cover |
| 3. ADF Paper Tray | 6. Control Panel |

1.4.1.2 The Rear View

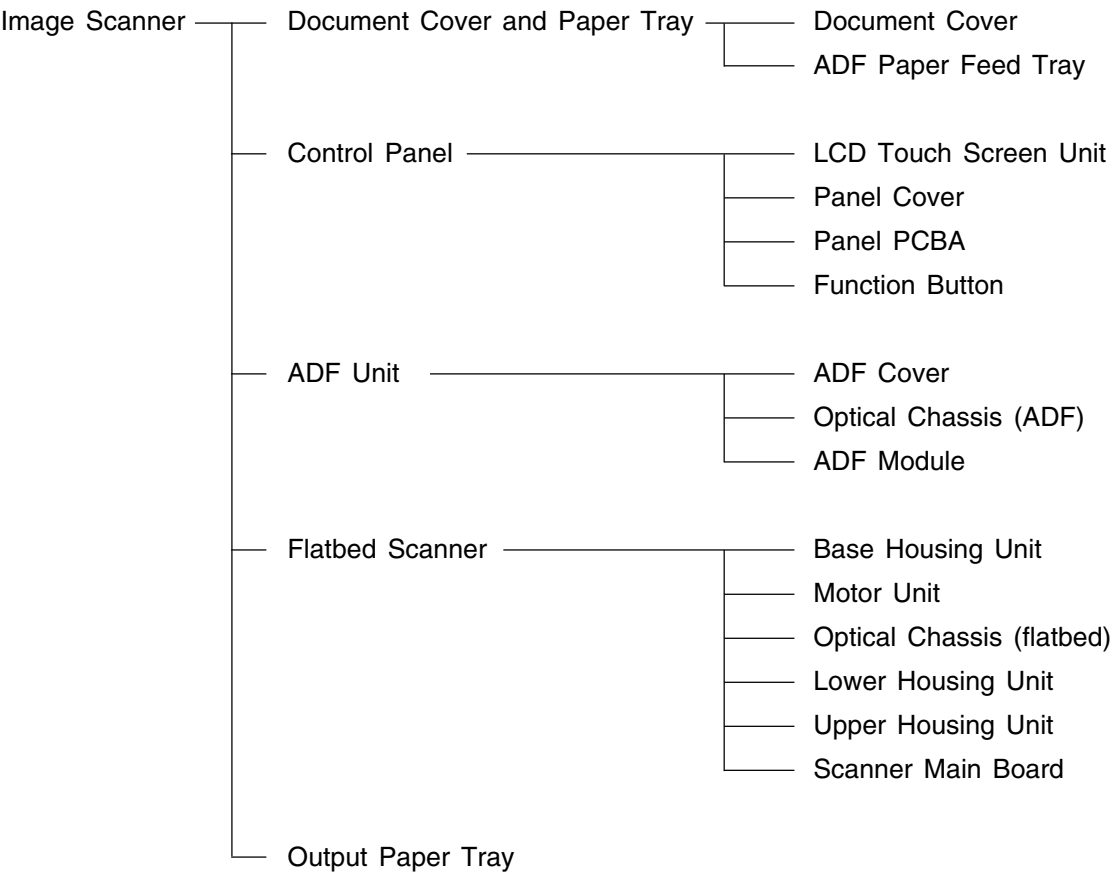


- | | |
|--------------------|--------------------------------------|
| 1. ADF Paper Tray: | To hold multi-page document. |
| 2. ADF Cable: | To connect ADF with main unit. |
| 3. Display Port: | To connect VGA display cable. |
| 4. Control Port: | To connect computer. |
| 5. ADF Port: | To connect ADF cable. |
| 6. Power Switch: | Turn on and off the machine. |
| 7. Power Jack: | To connect power. |
| 8. Port 1394: | To connect the machine with printer. |

Figure 1-1 S9800 Outer View

1.4.2 Mechanical Configuration

The equipment consists of the following components:



1.5 Theory of Operation

1.5.1 Introduction

This section explains the theory of operation of this scanner.

The microprocessor in this scanner controls the following functions.

- Interface
- Scanning module drive
- ADF drive
- Reading mode (reading density, document size, half-tone) selection.

Figure 1-2 shows the operation mode sequence.

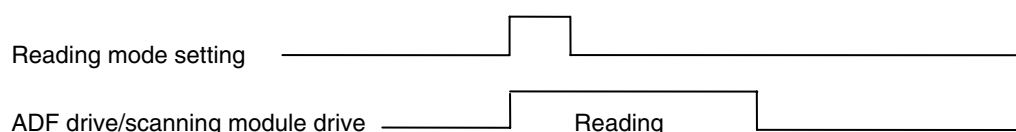


Figure 1-2 Operation sequence

1.5.2 Mechanical Section Operation

1.5.2.1 Scanning module drive

The carrier is driven by a 2-phase stepping motor. The stepping motor has a rotation of 1.8° (full step). And the use of micro-stepping control technique can work the motor to move the scanning module at 1/600 inch/step.

1.5.2.2 ADF mechanism operation

The ADF is driven by a 2-phase stepping motor. The stepping motor has a rotation of 1.8° (full step). The use of micro-stepping control technique enables the motor to move the paper on the ADF at 1/300 inch/step.

1.5.3 System Description

The S9800 is a duplex scanner which can scan synchronously both top and bottom size in a document. It includes one main control board, two optical modules, one ADF module and one LCD panel.

1.5.3.1 System Diagram

Figure 1-3 shows the system block diagram.

The main control board controls all the modules built up the S9800. It includes a RISC. ARM7 as the main controller, one Flash Memory as program area and one SDRAM as working space, two ASIC for flatbed and ADF image processing and each have external 64MB SRDRAM for data processing, two A/D converter for processing flatbed and ADF CCD signals input, two sets of motor drivers for driving flatbed and ADF motors, one 1394 controller for data interfacing with MFP controller card.

The power is an external 24V/2090mA power adapter for the scanner. There are some different values inside the scanner.

- +24V Power directly comes from the power adapter and used for flatbed and ADF motor.
- +12V Power converted from 7812 to supply flatbed and ADF CCD
- +2.5V Power converter from AME8810DEGT to supply ARM7.
- +5V Power converter from LM2576/5.0V to supply flatbed and ADF A/D converters and all 5V logic.
- +3.3V Power converted from LM 2576/3.3V to supply RTL8811, 1394 controller, two image processing ASICs and some 3.3V logics.

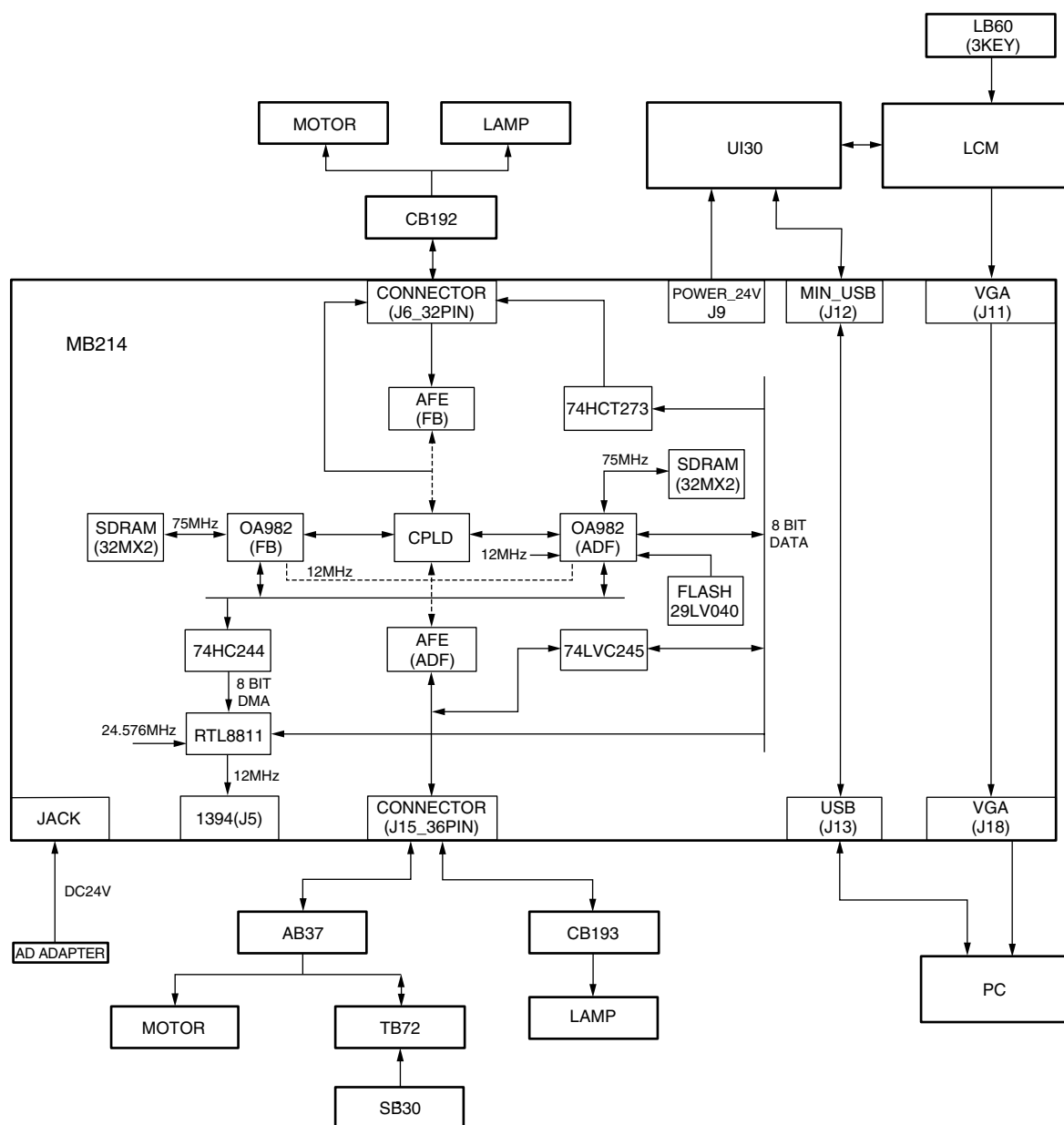


Figure 1-3 Scanner Block Diagram (non-RoHS)

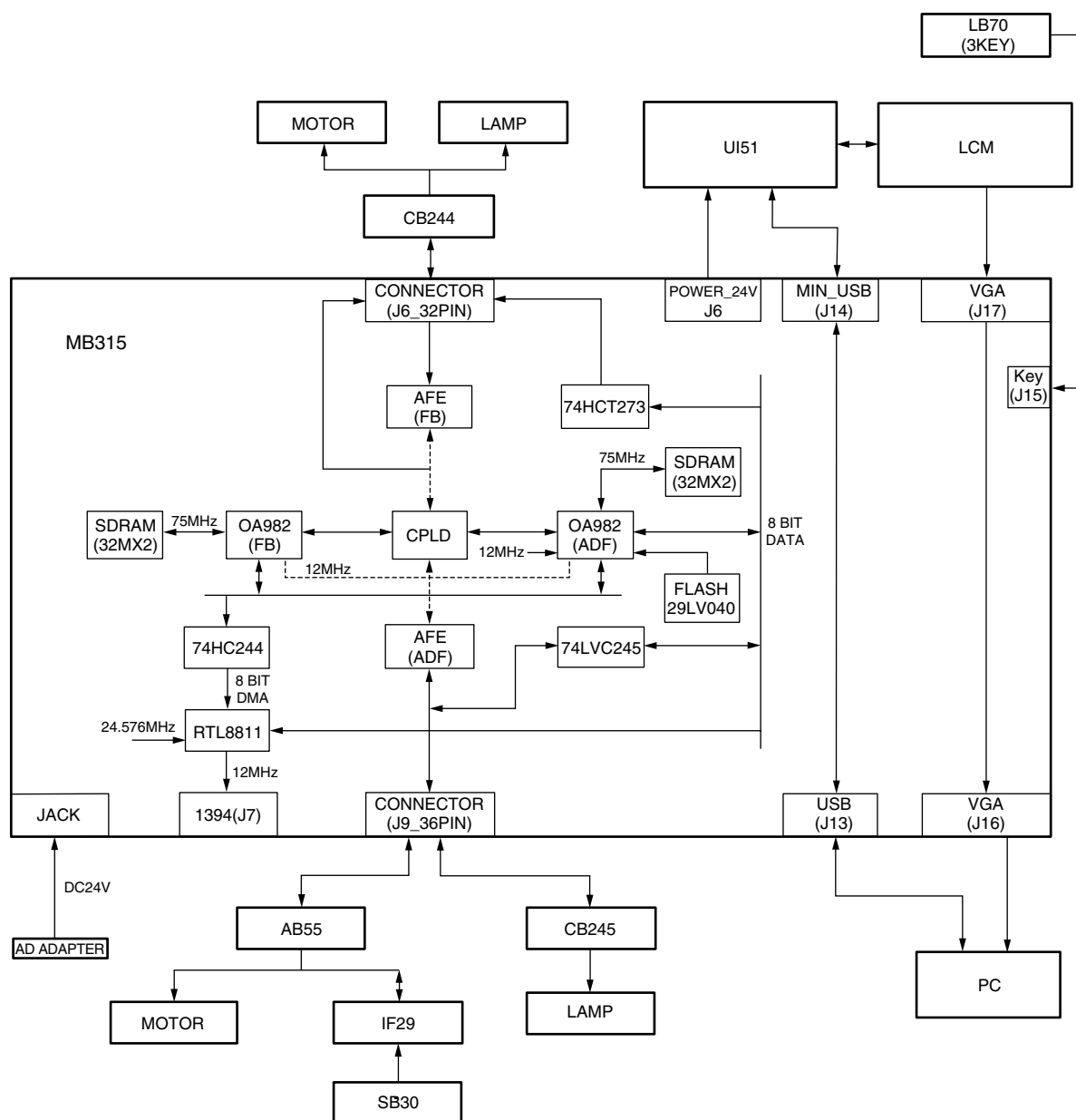


Figure 1-3 Scanner Block Diagram (RoHS)

1.5.3.2 1394 interface:

This scanner and the host are connected via the 1394 interface.

1.5.3.3 Video circuit:

The video circuit of this scanner includes: CCD driving circuit, CCD signal processing circuit.

1 CCD Driving Circuit

The CCD driving circuit is used to generate correct signals to the CCD, so that the CCD may generate the correct image data.

Pin assignment for Flatbed Video Circuit J6(Non RoHS)

Pin No.	Name	Function
1	MGND	Motor Ground
2	MGND	Motor Ground
3	MCLK	Motor Clock
4	POWER_INV	Inverter Power
5	POWER_INV	Inverter Power
6	+5V	+5V Power
7	SH	CCD Shift Pulse
8	HomeSensor	Home Position Sensor
9	GND	Digital Ground
10	PH2	CCD Phase Pulse2
11	PH1	CCD Phase Pulse1
12	GND	Digital Ground
13	CP	CCD Clump Pulse
14	RS	CCD Reset Pulse
15	WSW	Color/BW Switch
16	+12V	+12V Power
17	VINB	CCD Blue Output
18	AGND	Analog Ground
19	VING	CCD Green Output
20	AGND	Analog Ground
21	VINR	CCD Red Output
22	AGND	Analog Ground
23	ENB	Motor Enable
24	MRST	Motor Reset
25	MODE1	Motor Mode Control1
26	DIR	Motor Direction Control
27	MODE2	Motor Mode Control2
28	TORQUE1	Motor Torque Control1
29	MODE3	Motor Mode Control3
30	TORQUE2	Motor Torque Control2
31	MPOWER	Motor Power
32	MGND	Motor Ground

Pin assignment for Flatbed Video Circuit J5(RoHS)

Pin No.	Name	Function
1	MGND	Motor Ground
2	POWER_INV	Inverter Power
3	MGND	Motor Ground
4	MPOWER	Motor Power
5	MGND	Motor Ground
6	VREF1	Motor Current Control1
7	WSW	Color/BW Switch
8	VREF2	Motor Current Control2
9	DIR	Motor Direction Control
10	MCLK	Motor Clock
11	SLEEP	Motor Sleep Control
12	MRST	Motor Reset
13	MODE2	Motor Mode Control2
14	MODE1	Motor Mode Control1
15	+5V	+5V Power
16	SH	CCD Shift Pulse
17	GND	Digital Ground
18	PH1+	CCD Phase Pulse1+
19	PH1-	CCD Phase Pulse1-
20	RS+	CCD Reset Pulse+
21	RS-	CCD Reset Pulse-
22	CP+	CCD Clump Pulse+
23	CP-	CCD Clump Pulse-
24	GND	Digital Ground
25	VINB	CCD Blue Output
26	AGND	Analog Ground
27	VING	CCD Green Output
28	AGND	Analog Ground
29	VINR	CCD Red Output
30	AGND	Analog Ground
31	+12V	+12V Power
32	HomeSensor	Home Position Sensor

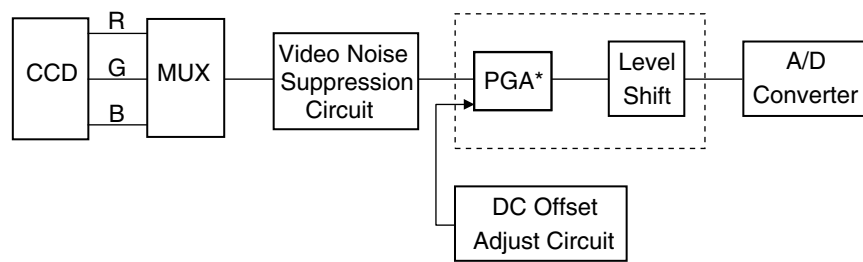
Pin assignment for ADF Video Circuit J16(Non RoHS)

Pin No.	Name	Function
1	+5V	+5V Power
2	GND	Digital Ground
3	GND	Digital Ground
4	GND	Digital Ground
5	GND	Digital Ground
6	MPOWER	Motor Power
7	MGND	Motor Ground
8	MGND	Motor Ground
9	VINB	CCD Blue Output
10	VING	CCD Green Output
11	VINR	CCD Red Output
12	DATA0	Data Bus0
13	DATA2	Data Bus2
14	DATA4	Data Bus4
15	DATA6	Data Bus6
16	MCLK	Motor Clock
17	RD1	Data Read Signal1
18	MGND	Motor Ground
19	POWER_INV	Inverter Power
20	RS	CCD Reset Pulse
21	CP	CCD Clump Pulse
22	PH1	CCD Phase Pulse1
23	PH2	CCD Phase Pulse2
24	MPOWER	Motor Power
25	SH	CCD Shift Pulse
26	WSW	Color/BW Switch
27	AGND	Analog Ground
28	AGND	Analog Ground
29	AGND	Analog Ground
30	DATA1	Data Bus1
31	DATA3	Data Bus3
32	DATA5	Data Bus5
33	DATA7	Data Bus7
34	RD	Data Read Signal
35	WR	Data Write Signal
36	PLUG	ADF plug detect

Pin assignment for ADF Video Circuit J9(RoHS)

Pin No.	Name	Function
1	+5V	+5V Power
2	GND	Digital Ground
3	GND	Digital Ground
4	SH	CCD Shift Pulse
5	WSW	Color/BW Switch
6	MPOWER	Motor Power
7	MGND	Motor Ground
8	MGND	Motor Ground
9	VINB	CCD Blue Output
10	VING	CCD Green Output
11	VINR	CCD Red Output
12	DATA0	Data Bus0
13	DATA2	Data Bus2
14	DATA4	Data Bus4
15	DATA6	Data Bus6
16	MCLK	Motor Clock
17	RD1	Data Read Signal1
18	MGND	Motor Ground
19	POWER_INV	Inverter Power
20	CP+	CCD Clump Pulse+
21	CP-	CCD Clump Pulse-
22	PH1+	CCD Phase Pulse1+
23	PH1-	CCD Phase Pulse1-
24	MPOWER	Motor Power
25	RS-	CCD Reset Pulse-
26	RS+	CCD Reset Pulse+
27	GND	Digital Ground
28	GND	Digital Ground
29	GND	Digital Ground
30	DATA1	Data Bus1
31	DATA3	Data Bus3
32	DATA5	Data Bus5
33	DATA7	Data Bus7
34	RD	Data Read Signal
35	WR	Data Write Signal
36	PLUG	ADF plug detect

2. CCD signal processing circuit



The video noise suppression circuit is to eliminate the reset noise and low frequency noise of CCD and then PGA performs video gain control. The "level shift" circuit is used to bias the PGA output to satisfy the reference bottom requirement of the A/D converter. The "DC-OFFSET Adjust" circuit is used to adjust the bias level of video signal.

* PGA: Programmable gain amplifier

1.5.3.4 Sensor input

The sensor input includes home position sensor and ADF cover sensor.

1. Home position sensor The home position of the carrier motor is detected by photo sensor. The photo transistor transmission to the photo sensor receiver circuit is shown below.

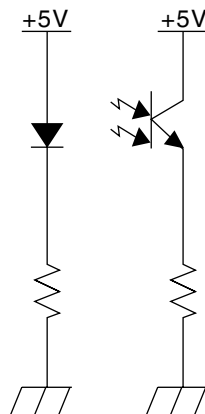


Figure 1-4 Home position sensor

The home position is detected when the carrier passes between the LED and the photo transistor.

2. ADF cover sensor
The operation of the ADF cover sensor is the same as that of the home position sensor.

2. INSTALLATION

- | |
|--|
| <ul style="list-style-type: none">2.1 Precautions of Installation2.2 Unlocking Your Scanner2.3 Setting up the ADF Paper Tray2.4 Placing Your Original |
|--|

This chapter explains the unpacking procedure, installation procedure and confirmation of operation.

2.1 Precautions of Installation

Pay attention to the following matters before unpacking and installation.

- Do not install in a place where vibration may occur.
- Keep the scanner out of direct sunlight. Do not install near a heat source.
- Do not place the scanner around materials which shut off the circulation of air.
- Do not install in a humid or dusty place.
- Do not use the wall socket with connecting devices which may generate noise, for example, air-conditioner, etc.
- Use a suitable AC power source.
- Place the scanner on a level surface.

2.2 Unlocking Your Scanner

The scan unit is locked during transport to protect the scanning mechanism from being damaged. Be sure to unlock the scan unit before using the machine.

- 1) Locate the lock switch on the left corner of the machine.
- 2) Move the lock switch to the "Unlocked Position".
- 3) Put lock switch cover.

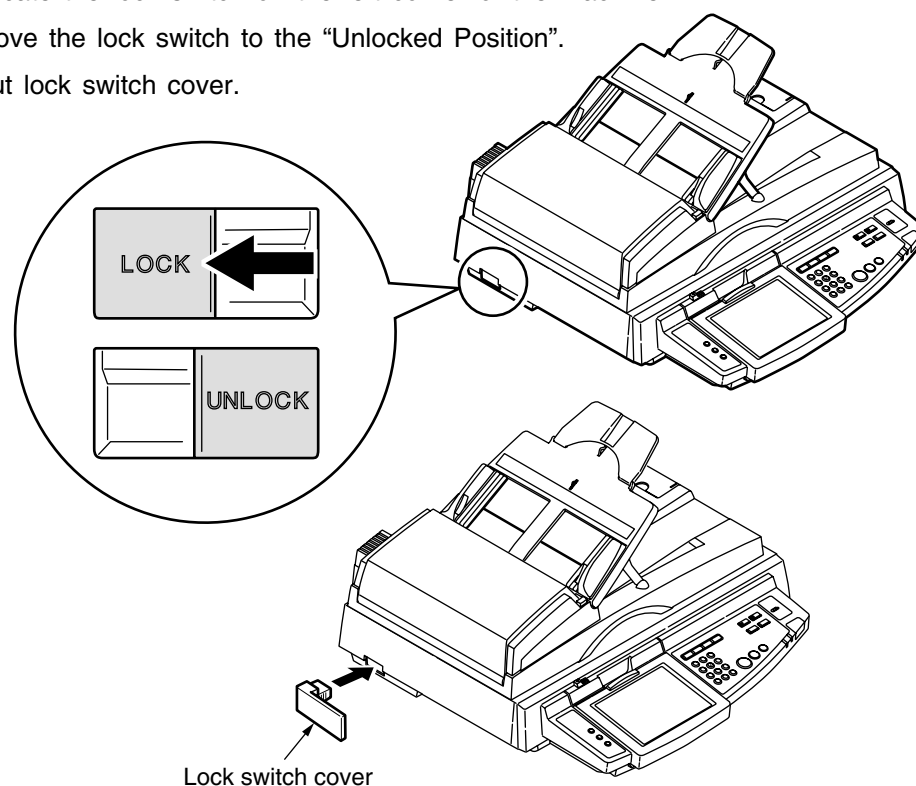
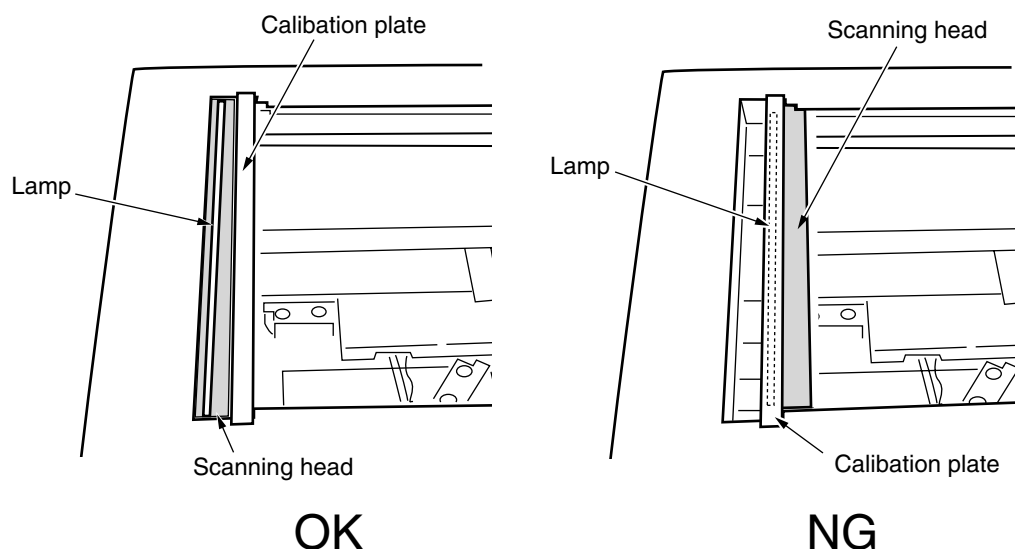


Figure 2-1 Unlocking the Scanning Unit

Note:

If you need to move your S9800 for repair or any other reason, be sure to lock your S9800 before moving. To lock your S9800, please do the following,

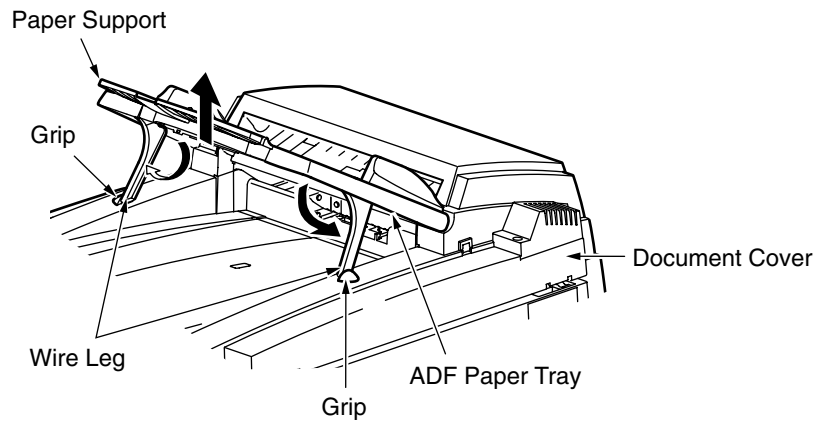
1. Turn off your S9800.
2. If the scanning head is not located at the left end, turn the S9800 on to return the scanning head to the left end. After the scanning head is returned to the left end, turn the power supply off.
3. Move the lock switch to the "Locked Position".



2.3 Setting up the ADF Paper Tray

The ADF (Auto Document Feeder) Paper Tray and Paper Support are attached to Auto Document Feeder. Before using the Auto Document Feeder, the ADF Paper Tray and Paper Support have to be properly set up.

- 1) Raise the ADF Paper Tray to about 45 degrees as shown below.
- 2) Pull out two wire legs on the ADF Paper Tray. Insert the wire legs to the grips of the document cover.



- 3) After completing the insertion, the wire legs should stand firmly as shown below.

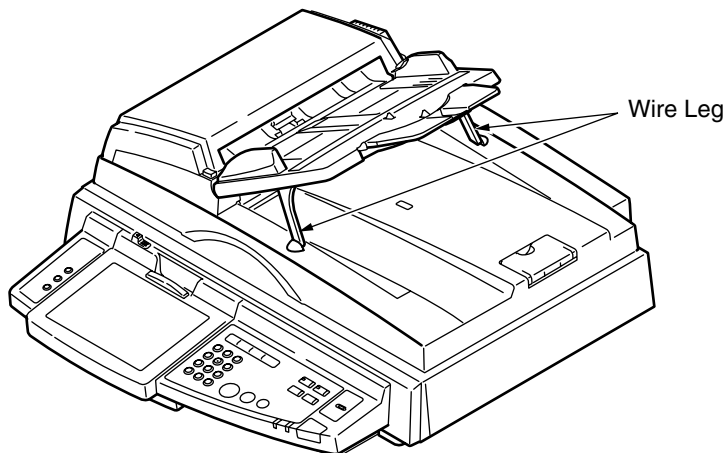
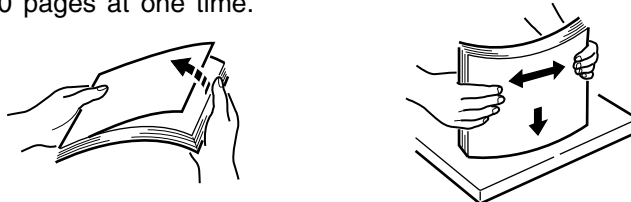


Figure 2-2 Installing the ADF Paper Tray

2.4 Placing Your Original

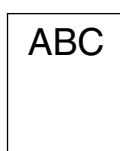
2.4.1 In the Auto Document Feeder

1. Make sure your document is free of staples, paper clips and is not tore out.
2. If you have multiple pages, fan your document(s) to avoid occasional paper jam. The ADF holds up to 50 pages at one time.



3. Place your document(s) with the text FACE UP in the ADF and make sure that the top of the pages is fed in first.

Setup orientation of papers



Face Up

Paper Guide

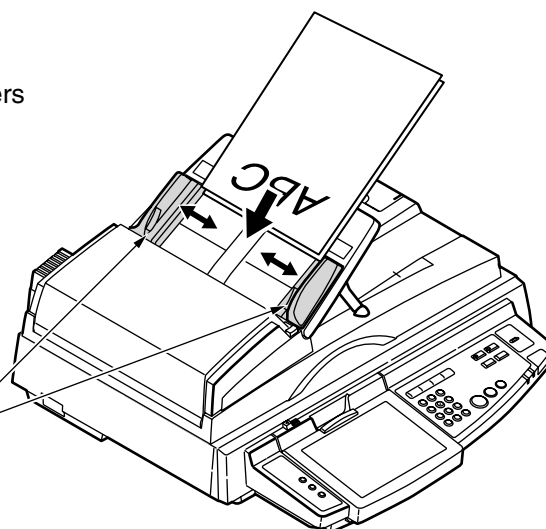


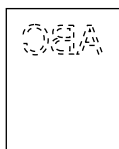
Figure 2-3 Loading Paper from the ADF

4. Adjust the Paper Guides to center the document(s) in the ADF.

2.4.2 On the Document Glass

Place your original with the text face down on the document glass.

Setup orientation of papers



Face Down

Align in the upper-left corner

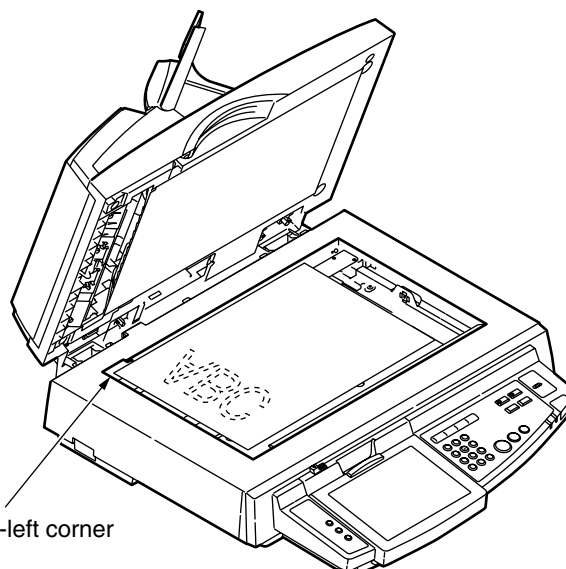


Figure 2-4 Placing Paper on the Flatbed

3. PROBLEM SOLVING

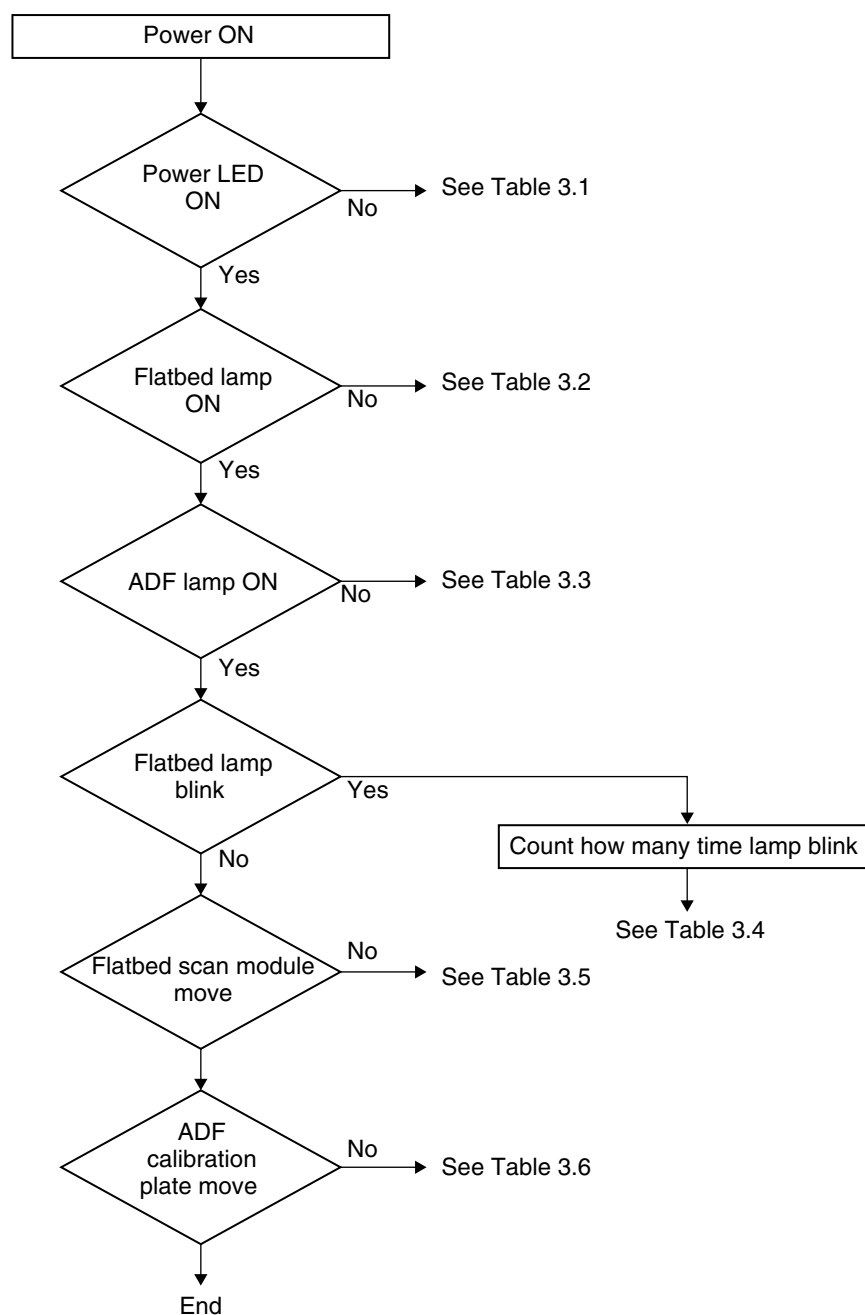
- 3.1 Diagnostics
- 3.2 Troubleshooting
- 3.3 Error Code

This chapter describes troubleshooting flowcharts and tables to isolate the problem.

3.1 Diagnostics

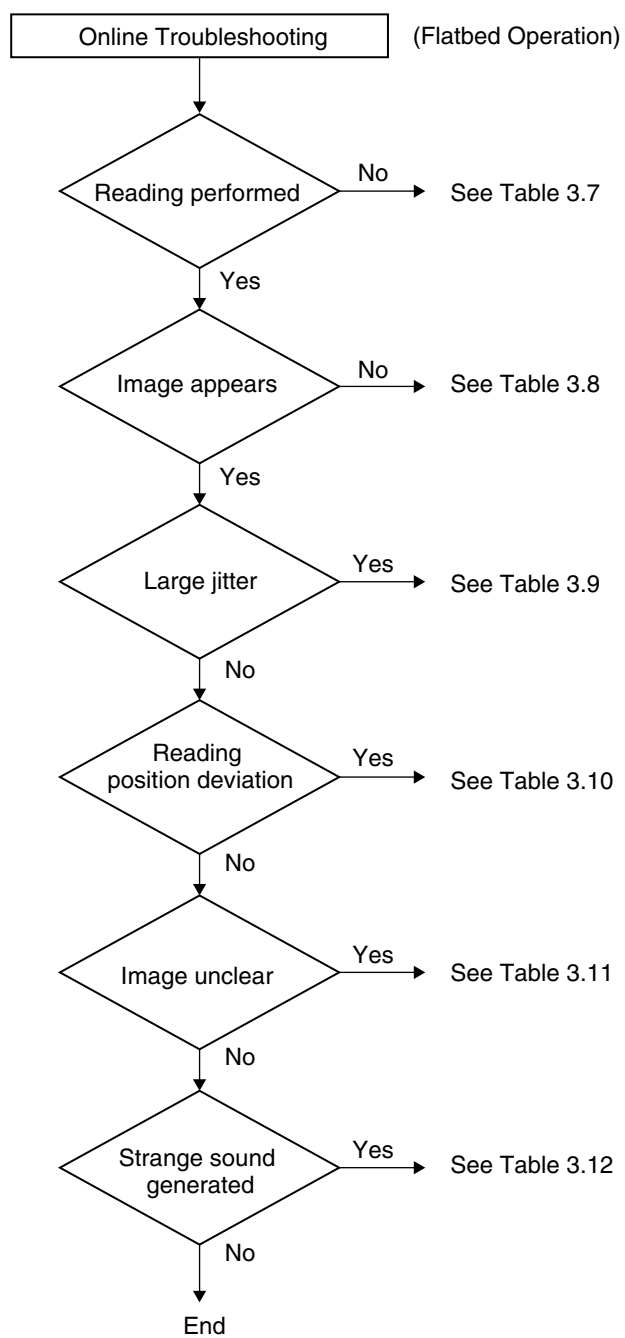
3.1.1 Diagnostic Flowcharts

3.1.1.1 Troubleshooting flowchart: power on to scanner ready.



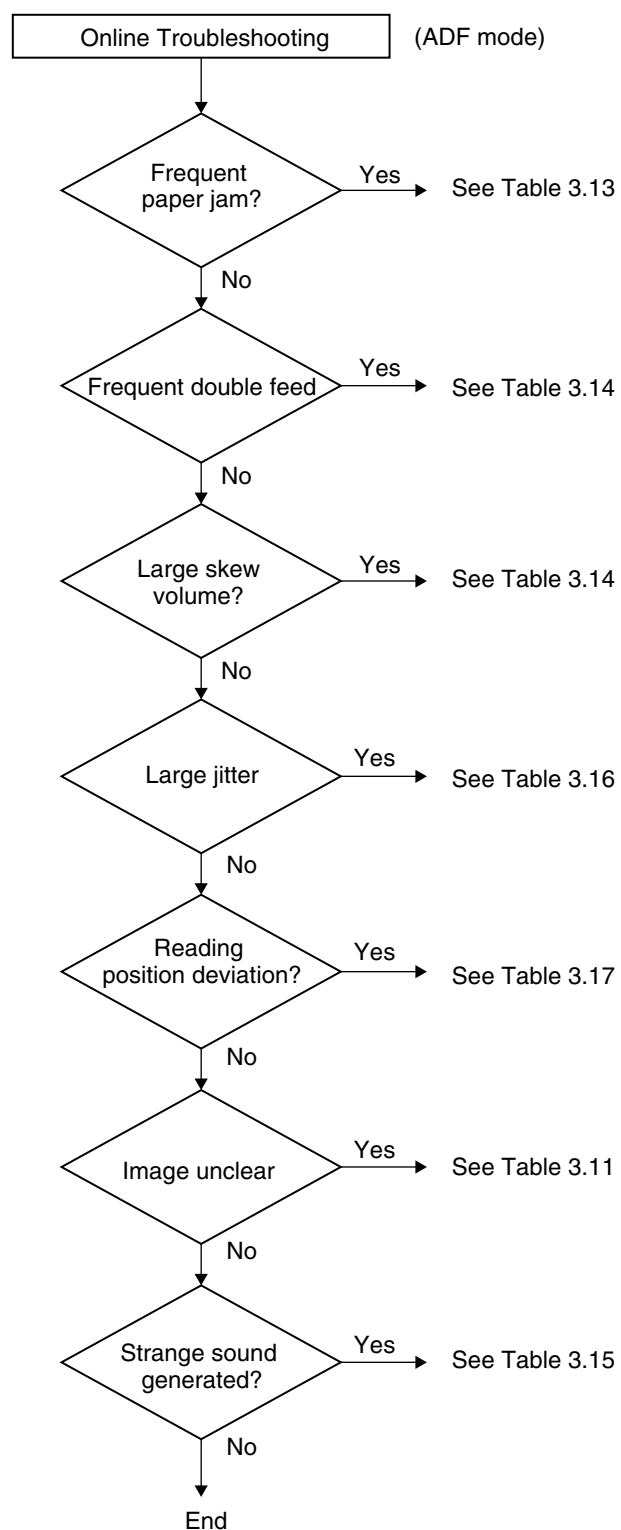
Flowchart 3-1

3.1.1.2 Troubleshooting flowchart: Flatbed operation



Flowchart 3-2

3.1.1.3 Troubleshooting flowchart: ADF operation



Flowchart 3-3

3.1.2 Tables

The tables in this section provide detailed troubleshooting information.

3.1.2.1 The Power LED doesn't turn on

Table 3.1

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
Unplugged from outlet	None	Visual check	Insert the AC plug into the outlet	
AC power unplugged at unit	None	Visual check	Insert the AC cable into unit	
Power switch is OFF	None	Visual check	Turn the power switch on	
Power unit AC input connector disconnected	None	Visual check	Connect the connector	
Power switch connector disconnected	None	Visual check	Connect the connector J2(Non RoHS) J1(RoHS)	
Power unit output voltage failure	Power unit	Output voltage (+24V) check Refer to scation 3.3	Replace the power unit	
PCBA Failure	Main PCB MB214(Non RoHS) MB315(RoHS) Ope control PCB UI30(Non RoHS) UI51(RoHS)	Output voltage (+5V) check Refer to scation 3.3	Replace main PCB or OPE PCB	
OPE control PCBA -main PCBA connection failure	None	Visual check	Connect the connector J9(Non RoHS) J6(RoHS)	

3.1.2.2 Flatbed lamp doesn't turn on

Table 3.2

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
Main PCB - CCD PCB connection failure	None	Visual check	Connect the connector J6(Non RoHS) J5(RoHS)	None
Inverter power failure	Main PCB MB214(Non RoHS) MB315(RoHS)	Flatbed inverter power check(+24V) Refer to section 3.3	Replace main PCB	None
Flatbed scan module failure	Flatbed scan module	Visual check	Replace Flatbed unit	None
Main PCB failure	Main PCB MB214(Non RoHS) MB315(RoHS)	Visual check	Replace main PCB	None

3.1.2.3 ADF lamp doesn't turn on

Table 3.3

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
Main PCB - ADF connection failure	None	Visual check	Connect the connector J15(Non RoHS) J9(RoHS)	None
Inverter power failure	Main PCB MB214(Non RoHS) MB315(RoHS)	ADF inverter power check(+24V) Refer to section 3.3	Replace main PCB	None
ADF scan module failure	ADF scan module	Visual check	Replace ADF unit	None
Main PCB failure	Main PCB MB214(Non RoHS) MB315(RoHS)	Visual check	Replace main PCB	None

3.1.2.4 Flatbed lamp blink

Table 3.4

Lamp count	Cause	Relevant Unit	Maintenance Method	Remark
1	Flatbed ASIC RAM check error	Main PCB MB214(Non RoHS) MB315(RoHS)	Replace main PCB	None
2	ADF ASIC RAM check error	Main PCB MB214(Non RoHS) MB315(RoHS)	Replace main PCB	None
6	Flatbed home sensor error	Flatbed unit	Power recycle and if error occurs again replace Flatbed unit	None
7	Flatbed lamp failure	Flatbed unit	Replace Flatbed unit	None
8	ADF lamp failure	ADF unit	Replace ADF unit	None
9	ADF paper jam	ADF unit	Remove paper in ADF	None
10	ADF cover open	ADF unit	Close ADF cover	None
11	ADF home sensor error	ADF unit	Power recycle and if error occurs again replace ADF unit	None
12	Chassis lock error	Flatbed unit	Power off and unlock chassis	None

3.1.2.5 Flatbed scan module doesn't move

Table 3.5

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
Main PCB - CCD PCB connection failure	None	Visual check	Connect the connector J6(Non RoHS) J5(RoHS)	None
Motor power failure	Main PCB MB214(Non RoHS) MB315(RoHS)	Flatbed motor power check(+24V) Refer to section 3.3	Replace main PCB	None
Flatbed scan module failure	Flatbed scan module	Visual check	Replace Flatbed unit	None
Main PCB failure	Main PCB MB214(Non RoHS) MB315(RoHS)	Visual check	Replace main PCB	None

3.1.2.6 ADF calibration plate doesn't move

Table 3.6

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
Main PCB - ADF connection failure	None	Visual check	Connect the connector J15(Non RoHS) J9(RoHS)	None
Motor power failure	Main PCB MB214(Non RoHS) MB315(RoHS)	ADF inverter power check(+24V) Refer to section 3.3	Replace main PCB	None
ADF scan module failure	ADF scan module	Visual check	Replace ADF unit	None
Main PCB failure	Main PCB MB214(Non RoHS) MB315(RoHS)	Visual check	Replace main PCB	None

3.1.2.7 Reading is not performed

Table 3.7

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
ADF cover open	ADF cover	Visual check	Close the ADF cover	None

3.1.2.8 Image does not appear

Table 3.8

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
ADF cover open	ADF cover	Visual check	Close the ADF cover	None
Power supply-main control board connection failure	None	Visual check	Connect the connector J3(Non RoHS) J2(RoHS)	None
Power supply fails.	Power supply	Tester check (+24V, GND) Refer to section 3.3	Replace the power supply	None
Lamp failure	Lamp	Visual check	Replace Flatbed unit	None
Inverter failure	Inverter	Visual check	Replace Flatbed unit	None
CCD board-main control board connection failure	None	Visual check	Connect the connector J6(Non RoHS) J5(RoHS)	None
CCD board fails.	CCD Board	Visual check	Replace Flatbed unit	None

3.1.2.9 Large jitter(Flatbed)

Table 3.9

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
Power supply-main control board connection failure	None	Visual check	Connect the connector J3(Non RoHS) J2(RoHS)	None
Power supply fails	Power supply	Tester check (+24V, GND) Refer to section 3.3	Replace the power supply	None
CCD board-main control PCBA connection failure	None	Visual check	Connect the connector J6(Non RoHS) J5(RoHS)	None
Motor failure	Motor	Visual check	Replace Flatbed unit	None

3.1.2.10 Reading position deviation(Flatbed)

Table 3.10

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
Power supply-main control board connection failure	None	Visual check	Connect the connector J3(Non RoHS) J2(RoHS)	None
Power supply fails	Power supply	Tester check (+24V, GND) Refer to section 3.3	Replace the power supply	None
CCD board-main control PCBA connection failure	None	Visual check	Connect the connector J6(Non RoHS) J5(RoHS)	None
Motor failure	Motor	Visual check	Replace Flatbed unit	None
Home position sensor failure	CCD board	Visual check	Replace Flatbed unit	None

3.1.2.11 Image unclear

Table 3.11

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
Lamp too dark	Lamp	Visual check	Replace Flatbed unit	None
Dirt on Flatbed glass	Flatbed glass	Visual check	Clean the Flatbed glass with isopropyl alcohol	None
Dirt on calibration reference plate	Calibration reference plate	Visual check	Clean the calibration reference plate with isopropyl alcohol	None

3.1.2.12 Strange sound generated (Flatbed)

Table 3.12

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
Main control PCBA failure	Main control PCBA	Replace the main control PCBA	Replace the main control PCBA	None
Scanning module failure	Scanning module	Check if scanning module is loose	Replace Flatbed unit	None
Dirt on rail	None	Visual check	Replace Flatbed unit	None

3.1.2.13 Frequent paper jam

Table 3.13

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
Paper setting failure	Operation error	Is the paper correctly set in the paper chute?	Teach users to properly position the paper	None
Paper failure	Operation error	Is the specified paper used?	None	None
ADF connector slip-off	ADF unit	Visual check of motor rotation	Connect the connector	None
Pad assembly failure	Pad assembly	Check the pad assembly for wear and tear	Replace the pad assembly/ touch spring unit	None
ADF unit failure	ADF unit	Replace the ADF unit	Replace the ADF unit	None

3.1.2.14 Frequent double feed and skew

Table 3.14

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
Paper setting failure	Operation error	Is the paper correctly set in the paper chute?	Teach users to properly position the paper	None
Paper failure	Operation error	Is the specified paper used	None	None
ADF connector slip-off	ADF unit	Visual check of motor rotation	Connect the connector	None
Pad assembly failure	Pad assembly	Check the pad assembly for wear and tear	Replace the pad assembly/ touch spring unit	None
ADF unit failure	ADF unit	Replace the ADF unit	Replace the ADF unit	None

3.1.2.15 Strange sound generated (ADF)

Table 3.15

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
Paper setting failure	Operation error	Is the paper correctly set in the paper chute?	Teach users to properly position the paper	None
Paper failure	Operation error	Is the specified paper used?	None	None
ADF connector	ADF unit	Visual check of motor rotation	Connect the connector	None
ADF unit failure	ADF unit	Replace the ADF unit	Replace the ADF unit	None

3.1.2.16 Large jitter(ADF)

Table 3.16

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
Power supply-main control board connection failure	None	Visual check	Connect the connector J3(Non RoHS) J2(RoHS)	None
Power supply fails	Power supply	Tester check (+24V, GND) Refer to section 3.3	Replace the power supply	None
ADF-main control PCBA connection failure	None	Visual check	Connect the connector J15(Non RoHS) J9(RoHS)	None
Motor failure	Motor	Visual check	Replace ADF unit	None

3.1.2.17 Reading position deviation(ADF)

Table 3.17

Cause	Relevant Unit	Check Method	Maintenance Method	Remark
Power supply-main control board connection failure	None	Visual check	Connect the connector J3(Non RoHS) J2(RoHS)	None
Power supply fails	Power supply	Tester check (+24V, GND) Refer to section 3.3	Replace the power supply	None
ADF- main control PCBA connection failure	None	Visual check	Connect the connector J15(Non RoHS) J9(RoHS)	None
Motor failure	Motor	Visual check	Replace ADF unit	None

3.2 Error Code

Error Codes	Lamp Blink	Sense Key	ASC	ASCQ	Comment	Change
0A980(Flatbed) SDRAM test error	1	4	60h	02h	SDRAM fail	Change scanner card
0A980(ADF) SDRAM test error	2	4	60h	03h	SDRAM fail	Change scanner card
ARM7 SDRAM test error	3	4	60h	04h	SDRAM fail	Change scanner card
A/D dark calibration error (Flatbed)	4	4	44h	00h	Flatbed error	Change Flatbed lamp mechanism or scanner card
A/D dark calibration error (ADF)	5	4	44h	01h	ADF error	Change duplex side of ADF lamp mechanism or scanner card
Home sensor or Flatbed motor error	6	4	60h	01h	Flatbed chassis did not move to proper position	If Flatbed motor not moving, change Flatbed motor or scanner card, else change Flatbed mechanism
Lamp check error (Flatbed)	7	4	60h	00h	Flatbed lamp error	Change Flatbed lamp
Lamp check error (ADF)	8	4	60h	05h	ADF lamp error	Change ADF lamp
ADF paper jam	9	3	80h	01h	OK	OK
ADF cover open	10	3	80h	02h	OK	OK
SCSI command not support	NONE	5	20h	00h	Command error	
Invalid field in CDB	NONE	5	00h	00h	Command error	

3.3 Check point

Check point	Relevant unit	How to check
Power supply output	Main PCB MB214(Non RoHS) MB315(RoHS)	Connect with main PCB and check below point by tester Non RoHS : J3 3pin(+24V), J3 1pin(GND) RoHS : J2 3pin(+24V), J2 1pin(GND)
+5V power	Main PCB MB214(Non RoHS) MB315(RoHS)	Check below point by tester Non RoHS : C30 1pin(+5V), C30 2pin(GND) RoHS : C295 1pin(+5V), C295 1pin(GND)
Flatbed inverter power	Main PCB MB214(Non RoHS) MB315(RoHS)	Check below point by tester Non RoHS : J6 4,5pin(+24V), J6 1,2pin(GND) RoHS : J5 2pin(+24V), J5 1pin(GND)
ADF inverter power	Main PCB MB214(Non RoHS) MB315(RoHS)	Check below point by tester Non RoHS : J16 19pin(+24V), J16 3pin(GND) RoHS : J9 19pin(+24V), J9 3pin(GND)
Flatbed motor power	Main PCB MB214(Non RoHS) MB315(RoHS)	Check below point by tester Non RoHS : J6 31pin(+24V), J6 32pin(GND) RoHS : J5 4pin(+24V), J5 1pin(GND)
ADF motor power	Main PCB MB214(Non RoHS) MB315(RoHS)	Check below point by tester Non RoHS : J16 24pin(+24V), J16 3pin(GND) RoHS : J9 24pin(+24V), J9 3pin(GND)

4. MAINTENANCE

4.1 Cleaning

4.2 Spare Part Replacement

This chapter describes methods for cleaning, and the maintenance parts replacement, adjustment and lubrication necessary for normal operation of the image scanner.

Perform preventative maintenance in the shorter term either every 6 months or every 60,000 sheets scanning.

4.1 Cleaning

4.1.1 Cover and Glass

With soft cloth, wipe the cover and glass. If the dirt is heavy, use a neutral cleanser or alcohol. Wipe the glass carefully so no cleanser remains on the surface.

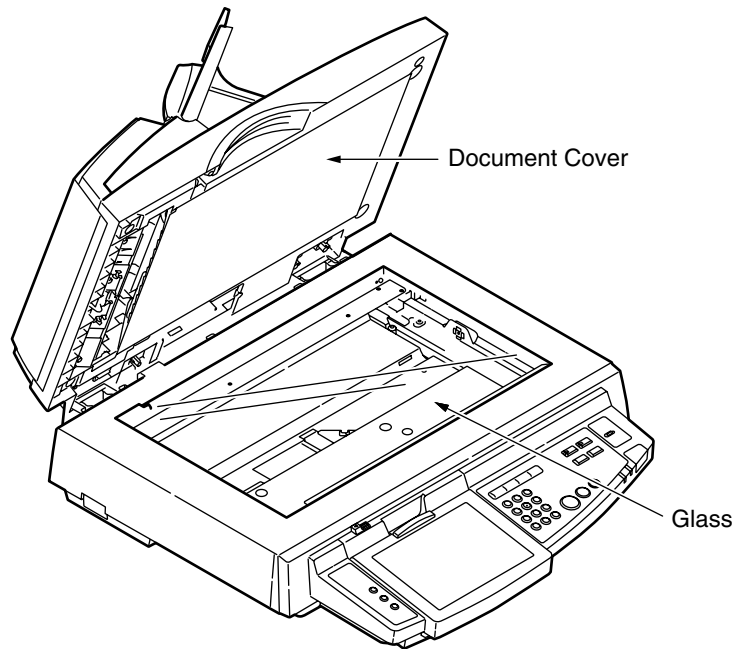


Figure 4-1 Cleaning Areas

4.2 Spare Parts Replacement

This section describes the spare parts replacement procedures. Depending on the part, adjustment or lubrication may be necessary, but this will be described in Section 6.

Note: Spare parts should be prepared based on section 1.1.

4.2.1 Notes on Replacement

- (1) Clean the disassembly and assembly location.
- (2) Turn off the power switch and remove the AC plug from the outlet before disassembly and assembly.
- (3) Follow the disassembly and assembly procedures. Never loosen the screws of parts that must not be disassembled.
- (4) Store the disassembled parts in a clean place to avoid loss.
- (5) After replacement, check the contacts and spare part mounting.
- (6) Assemble in the reverse order of disassembly.

4.2.2 ADF Snap-in Pad Module Removal and Mounting

After scanning approximately 100,000 pages through the ADF, the ADF pad module may be worn out and you may experience problems with document feeding. In this case, please replace the ADF pad module with a new one. For ordering the parts, please consult your nearest dealer and follow the procedure below to replace it.

5. ADJUSTMENT

5.1 Scanner

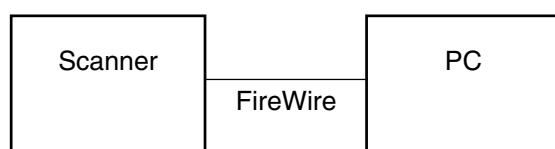
5.2 Touch panel

5.1 Scanner

The image gradation characteristics and scanning start position for the scanner are set at the factory before shipping, and the adjustment values are stored on the main board. The adjustment values vary depending on the scanning head and scanner mechanism, and so readjustment will be necessary if any of the following components are replaced.

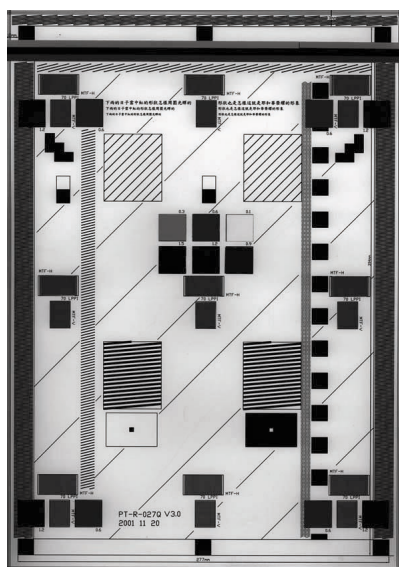
1. ADF UNIT
2. PCBA for ADF
3. ASSY TRAY
4. FLATBED UNIT
5. ASSY MAIN BOARD

Adjust by connecting the scanner to the PC (see diagram below).

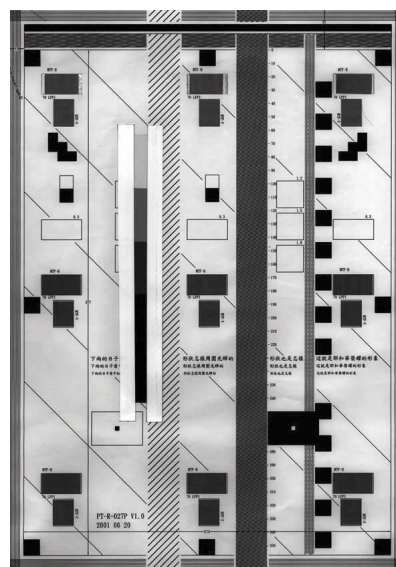


The following tools are used for adjustment.

1. PC (OS: Windows XP)
2. FireWire I/F board
3. FireWire cable
4. Scanner driver
5. Learning Tool
6. Adjustment test charts (for FB and ADF)



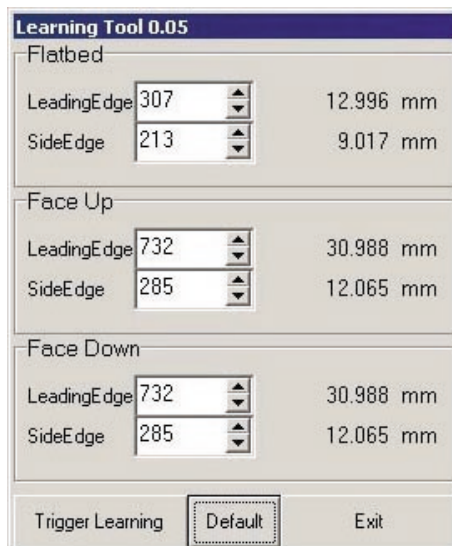
For FB



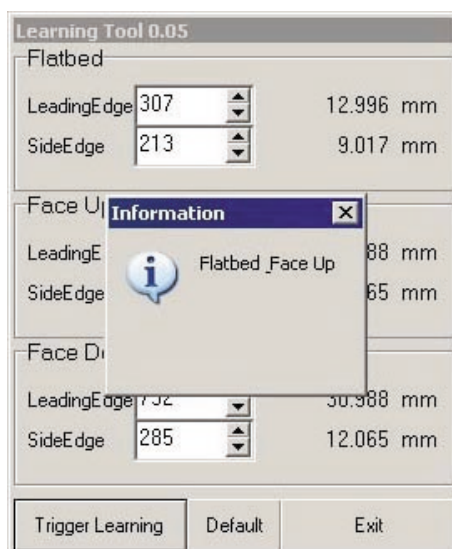
For ADF

Adjustment method

- (1) Install the scanner driver on the PC.
- (2) Install the Learning Tool on the PC.
- (3) Connect the PC to the scanner data port using the FireWire cable.
- (4) Launch the Learning Tool.

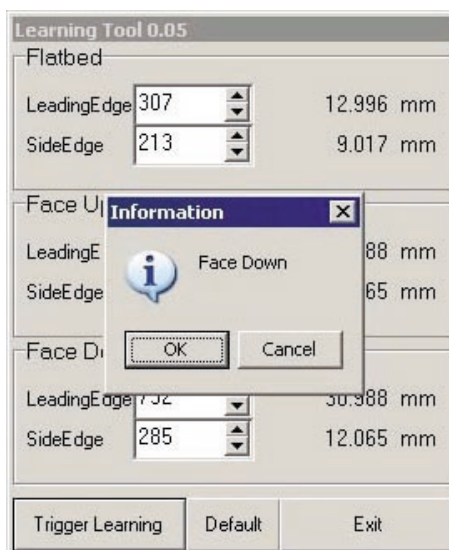


- (5) Click on Default.
- (6) Place the flatbed document on the document glass. Place the ADF document face-up in the ADF.
- (7) Click on Trigger Learning.
- (8) The message shown below is displayed and flatbed scanning starts automatically.

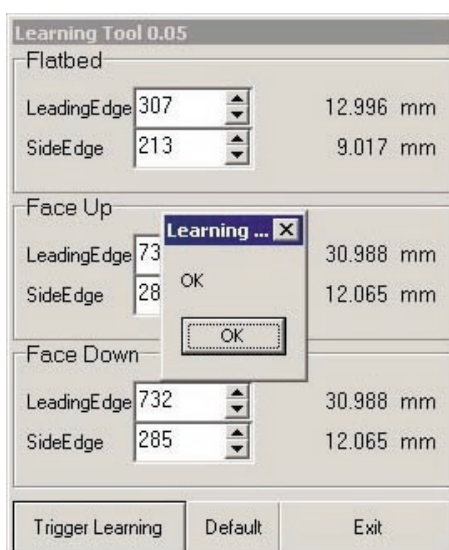


- (9) Flatbed scanning is performed 7 times before ADF face-up scanning starts automatically.

- (10) Place the document in the ADF again after each ADF face-up scan.
- (11) The message shown below is displayed after ADF face-up scanning has been performed 7 times.



- (12) Place the ADF document face-down in the ADF, and click on OK. ADF face-down scanning starts automatically.
- (13) Place the document in the ADF again after each ADF face-down scan.
- (14) The message shown below is displayed after ADF face-down scanning has been performed 7 times.

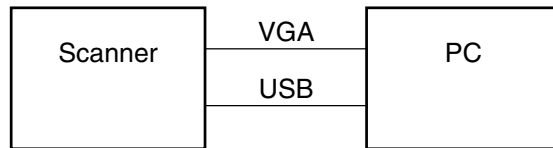


- (15) Click on OK.

5.2 Touch panel

The touch detection position on the touch panel is adjusted at the factory before shipping to coincide with the screen display position. The touch detection position can however be adjusted using the method described below.

Adjust by connecting the scanner to the PC (see diagram below).



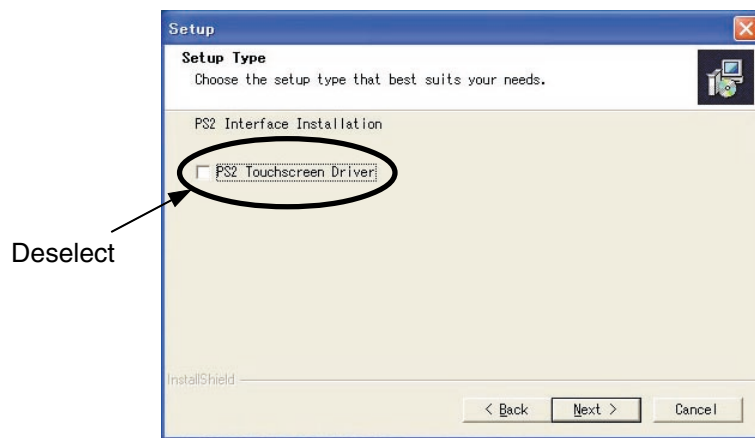
The following tools are used for adjustment.

1. PC (OS: Windows XP)
2. VGA cable
3. USB cable
4. Touch panel driver

Adjustment method

- (1) Install the touch panel driver on the PC.

Note: If the message shown below appears during installation, deselect the PS2 Touchscreen Driver checkbox.



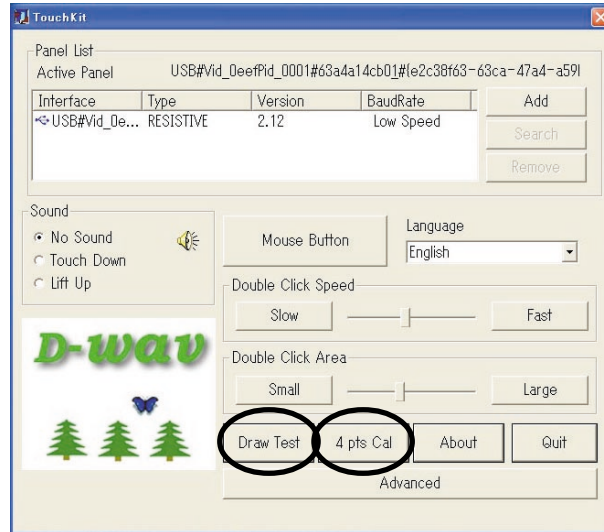
- (2) Set the PC screen resolution to 800 × 600 and the refresh rate to 60 Hz.

Note: The scanner screen will not be displayed if other resolutions or refresh rates are selected.

- (3) Connect the PC to the scanner control port using the USB cable.

- (4) Connect the PC to the display port using the VGA cable.
- (5) Launch Touchkit (the touch panel adjustment tool), and select 4pts Cal (see diagram below).

Note: Touchkit is installed when the touch panel driver is installed.



- (6) Click the centers of the circles using the adjustment stylus (in the sequence lower left, lower right, upper right, upper left).
- (7) Click on Draw Test.
- (8) Click several points on the screen, and check that the positions clicked are correctly selected. Finally, click on Quit.

6. DISASSEMBLY

- | | |
|-----|----------------------------|
| 6.1 | Part replacement |
| 6.2 | Part replacement procedure |

6.1 Part replacement

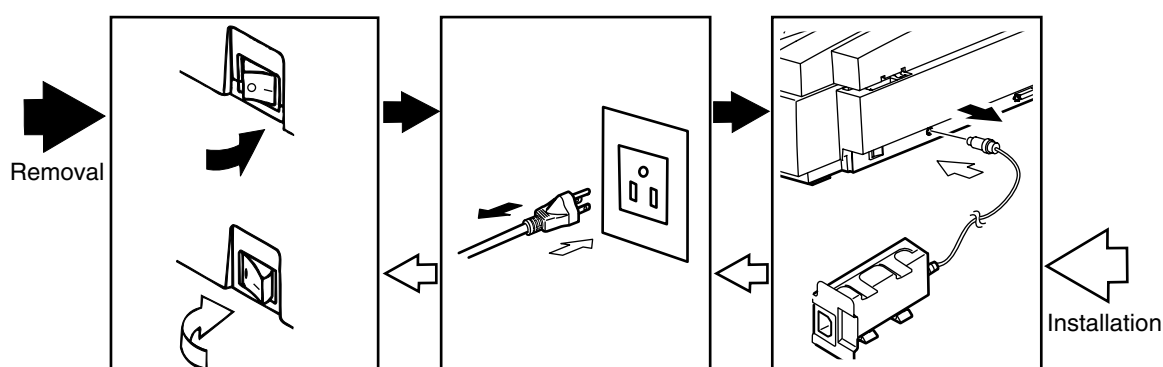
This section provides on-site replacement procedures of parts, assemblies and units. The replacement procedures describe the removal procedures. Installation shall be performed in the reverse order of removal.

The parts numbers used in this manual (e.g., (1) and (2)) are different from the numbers used in the corresponding Disassembly for Maintenance block diagrams (42960901TL/11TL) and RSPL(42960901TR/11TR).

When replacing parts, assemblies or units, note that RoHS and non-RoHS spare parts are not interchangeable.

6.1.1 Part replacement precaution

- (1) Be sure to disconnect the AC cord and the interface cable before replacing a part.
 - (a) The AC cord shall be disconnected in the following order:
 - ① Turn off "O" the power switch of the scanner.
 - ② Remove the AC plug of the AC cord from the AC outlet.
 - ③ Disconnect the AC cord and the interface cable from the scanner.
 - (b) The cord and cable shall be connected to the scanner in the following order:
 - ① Connect the AC cord and the interface cable to the scanner.
 - ② Insert the AC plug into the AC outlet.
 - ③ Turn on "I" the power switch of the scanner.

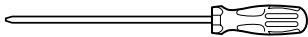
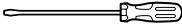
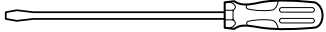
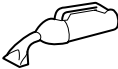
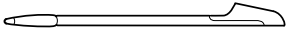


- (2) Do not disassemble the scanner if it is working properly.
- (3) Do not disassemble the scanner more than necessary. Do not remove any other parts not specified in the part replacement procedures.
- (4) Use the specified maintenance tools.
- (5) Disassembling shall be performed in the specified order. Otherwise, the parts might be damaged.
- (6) In order to avoid losing small parts such as screws and collars, temporarily fasten them back in place.
- (7) When handling ICs or printed circuit boards, such as the microprocessor, ROM, and RAM, do not wear gloves likely to cause static electricity.
- (8) Do not place printed circuit boards directly on the machine or on the floor.
- (9) Part replacement shall be performed in a neat, tidy and clean place.

[Maintenance tools]

Table 6-1-1-1 shows tools required for replacement of printed circuit boards and units.

Table 6-1-1-1 maintenance tools

No.	Maintenance tools		Quantity	Intended use	Remarks
1		No.2-200 magnetic screwdriver	1	3 to 5 mm screw	
2		No.3-100 screwdriver	1		
3		No.5-200 screwdriver	1		
4		Handy vacuum cleaner	1		
5		Stylus P/N : 43393901	1		Avision's Parts No. 051-1640-0-SP

6.2 Part replacement procedure

This section provides replacement procedures of the parts and assemblies shown in the disassembly system diagram below.

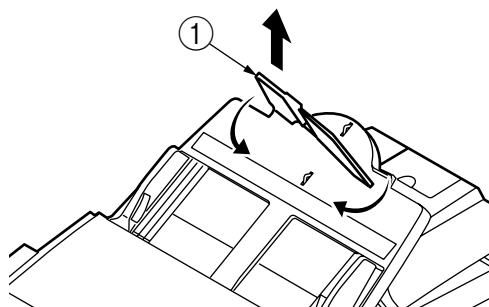
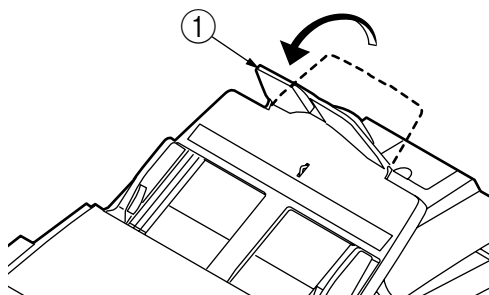
[Disassembly system diagram]

			Remarks
Scanner	1 ADF Unit	1 ADF PAPER SUPPORT	
		2 ADF PAPER STOPPER	
		3 ASS'Y PAD	
		4 PCBA (for ADF)	
		5 ASS'Y HINGE LIGHT / HEAVY	
		6 ASS'Y TRAY TRAY ASS'Y(Deskew)	
		7 ADF ROLLER Maintenance Kit	
	2 FLATBED Unit	1 COVER PANEL LEFT ASS'Y	
		2 COVER PANEL RIGHT ASS'Y	
		3 LCD ASS'Y	
		4 COVER SPACER PANEL ASS'Y	
		5 ASS'Y MAIN BOARD	
	3 AC ADOPTER WITH HOLDER		
	4 POWER CORD 10A/125V 1.8m (UL/CSA)		For ODA
	5 POWER CORD 10A/250V 1.8m (CEE)		For OEL
	6 POWER CORD 10A/250V 1.8m (BSI) UK		For OEL
	7 LOCK SWITCH COVER		
	8 3-IN-1 CABLE		
	9 CHART FOR ADF		
	10 CHART FOR FLATBED		

6.2.1 ADF Unit

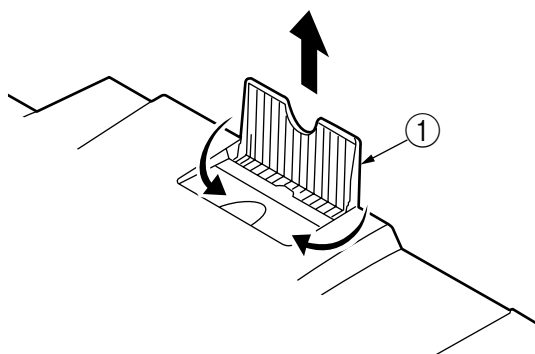
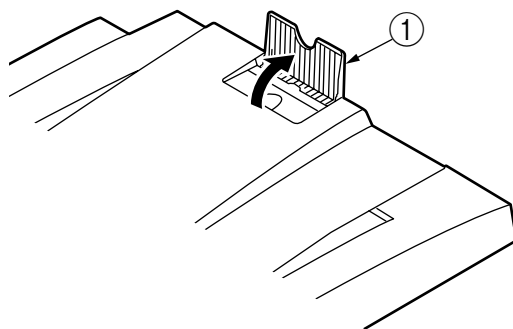
6.2.1.1 ADF PAPER SUPPORT

- (1) Rotate ADF PAPER SUPPORT① in the direction of the arrow by about 90 degrees.
- (2) Pull up ADF PAPER SUPPORT① by bending either supporting point of ADF PAPER SUPPORT① in the direction of the arrow.



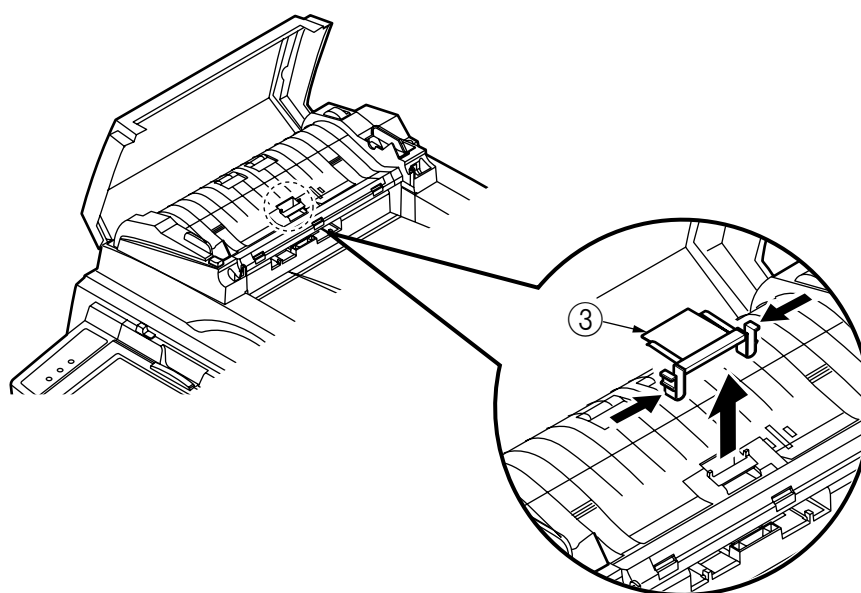
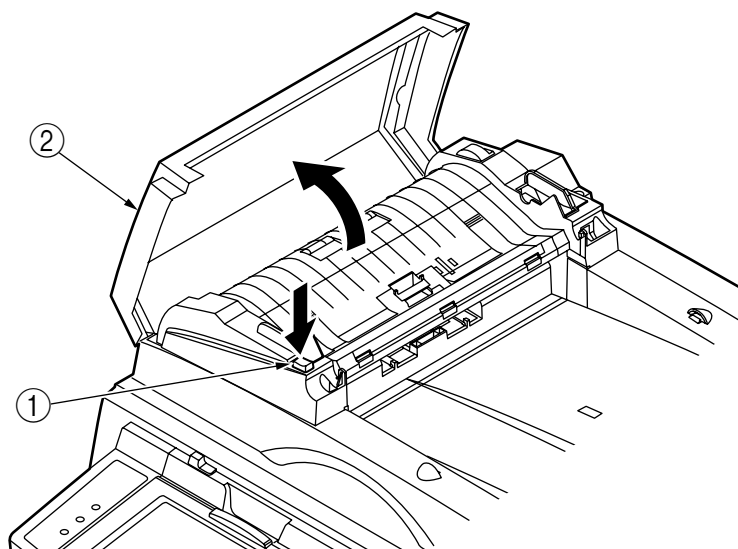
6.2.1.2 ADF PAPER STOPPER

- (1) Open by rotating ADF PAPER STOPPER① in the direction of the arrow.
- (2) Pull up ADF PAPER STOPPER① by bending either supporting point of ADF PAPER STOPPER① in the direction of the arrow.



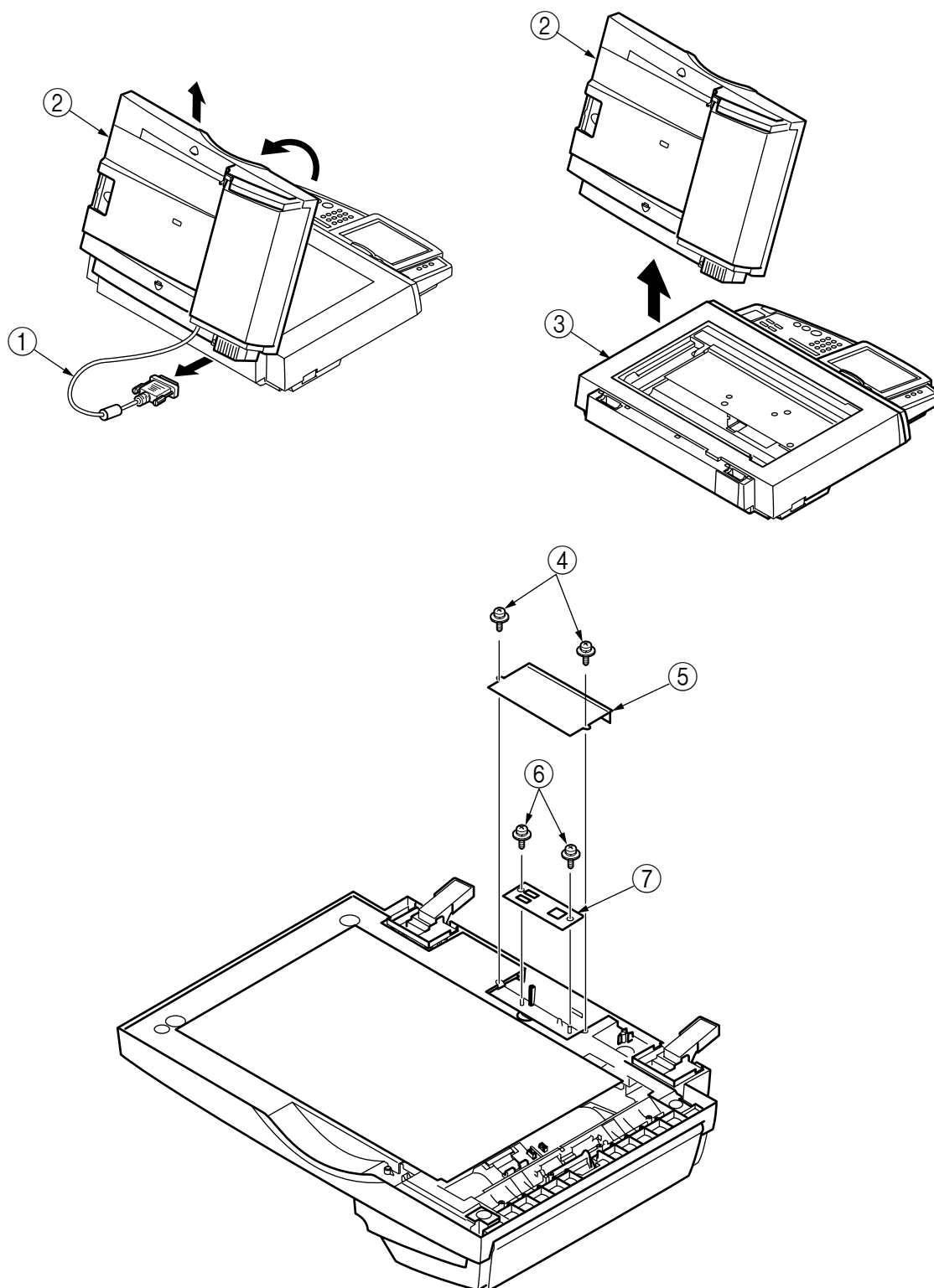
6.2.1.3 ASS'Y PAD

- (1) Press the Cover Open Button① and open ADF Front Cover② until it is locked up in the direction of the arrow.
- (2) Pinch the clicks on both sides of the ASS'Y PAD③ with your fingers, while bonding the clicks, pull up the pad.



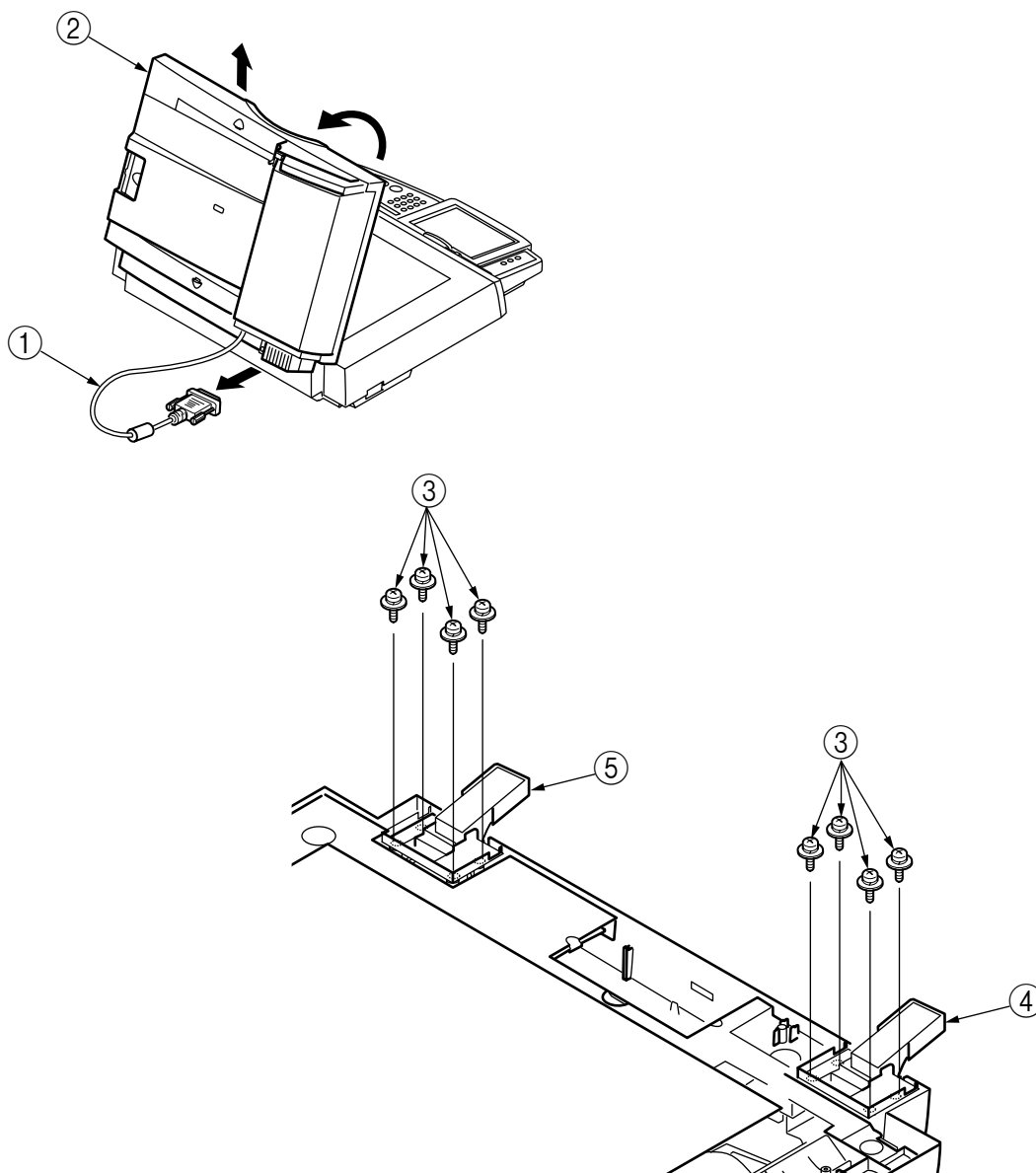
6.2.1.4 PCBA (for ADF)

- (1) Remove the ADF Cable① to open the ADF Unit②.
- (2) Pull the ADF Unit② from the FLATBED Unit③ and turn it back.
- (3) Take out the Screws④ to remove the Plate⑤.
- (4) Remove the Screws⑥ and all connectors, and then, remove PCBA (for ADF)⑦.



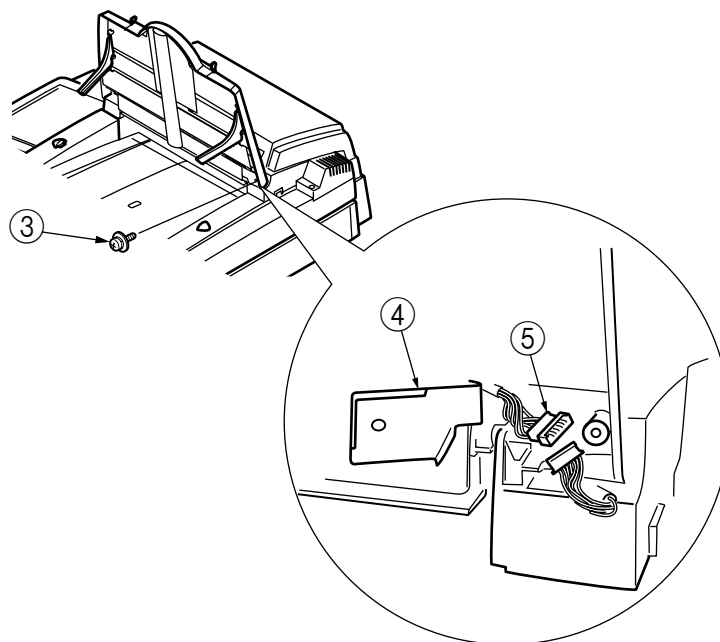
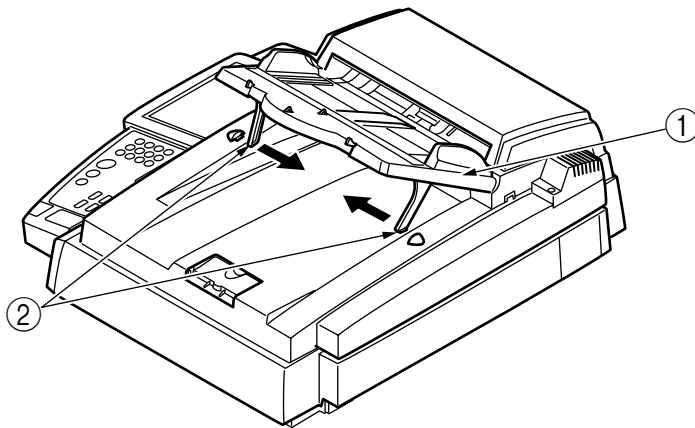
6.2.1.5 ASS'Y HINGE LIGHT / HEAVY

- (1) Remove the ADF Cable① and open and pull the ADF Unit②. Then, turn the ADF Unit② back.
- (2) Take out the eight Screws③ to remove ASS'Y HINGE HEAVY④ and ASS'Y HINGE LIGHT⑤.



6.2.1.6 TRAY ASS'Y (Deskew)

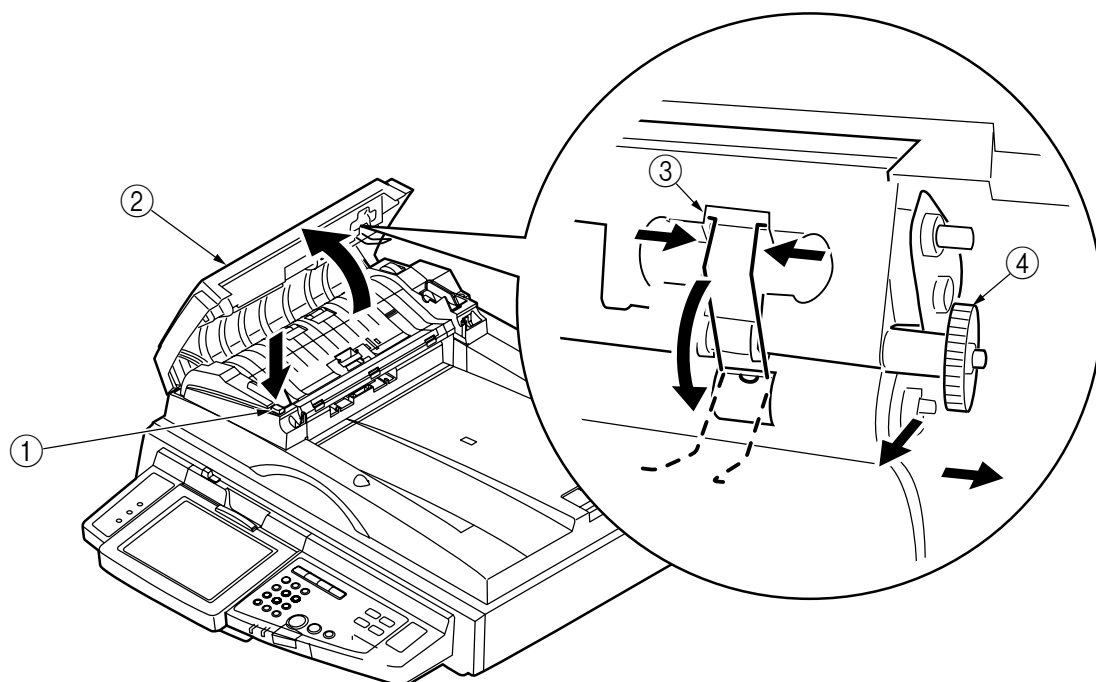
- (1) Remove by Folding② of TRAY ASS'Y① inside.
- (2) Get TRAY ASS'Y① upright.
- (3) Take out the Screw③ to open the Plate④.
- (4) Remove the Connector⑤ and remove by pulling TRAY ASS'Y①.



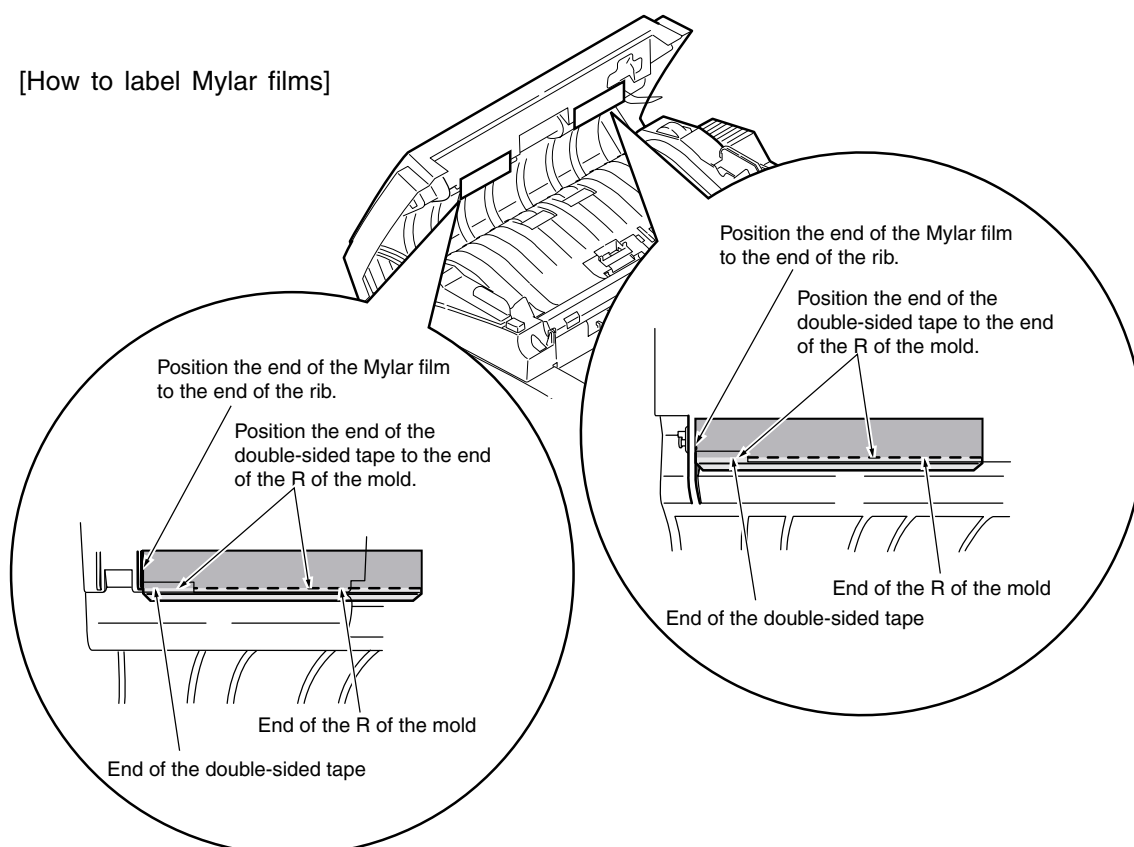
6.2.1.7 ADF ROLLER Maintenance kit

- (1) Remove the Mylar films (two places).
- (2) Press the Cover Open Button① and open the ADF Front Cover② until it is locked up in the direction of the arrow.
- (3) Pinch the Wires③ with your fingers to remove the top edge.
- (4) Pull ASS'Y ADF ROLLER④ in the direction of the arrow.

Note: Reassembly is reverse order of the above steps, and Mylar films must be labeled as the last step in the reassembly.
See the procedure below "How to label Mylar films" for reassembly.



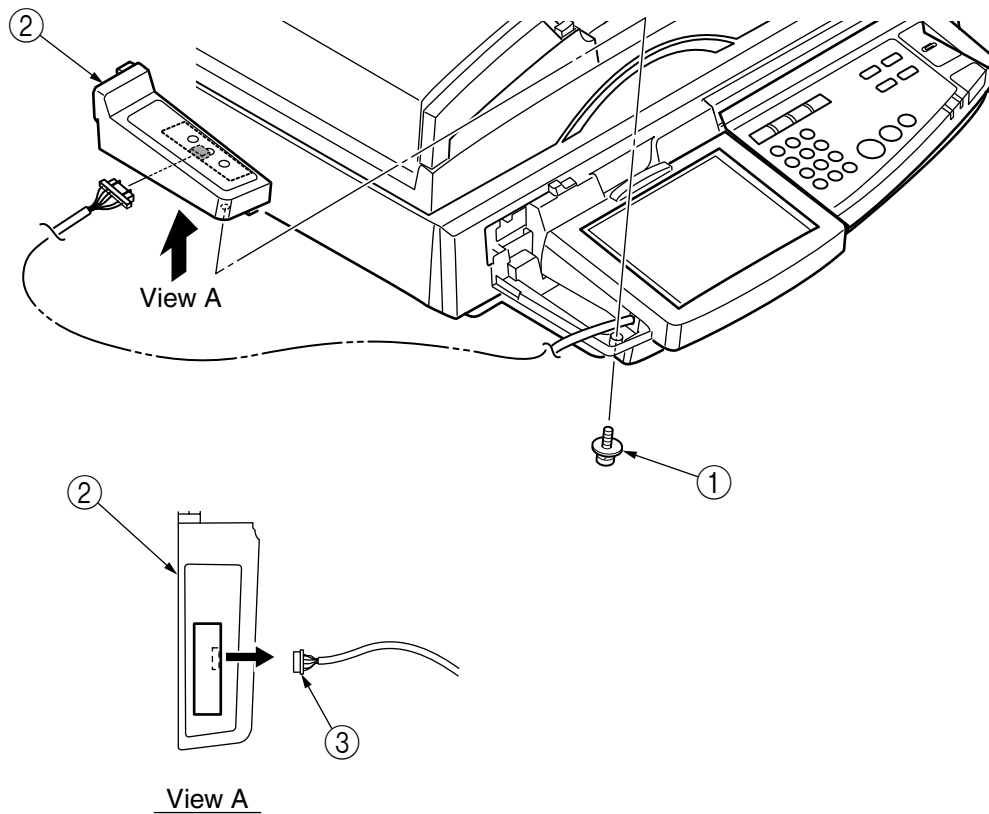
[How to label Mylar films]



6.2.2 FLATBED UNIT

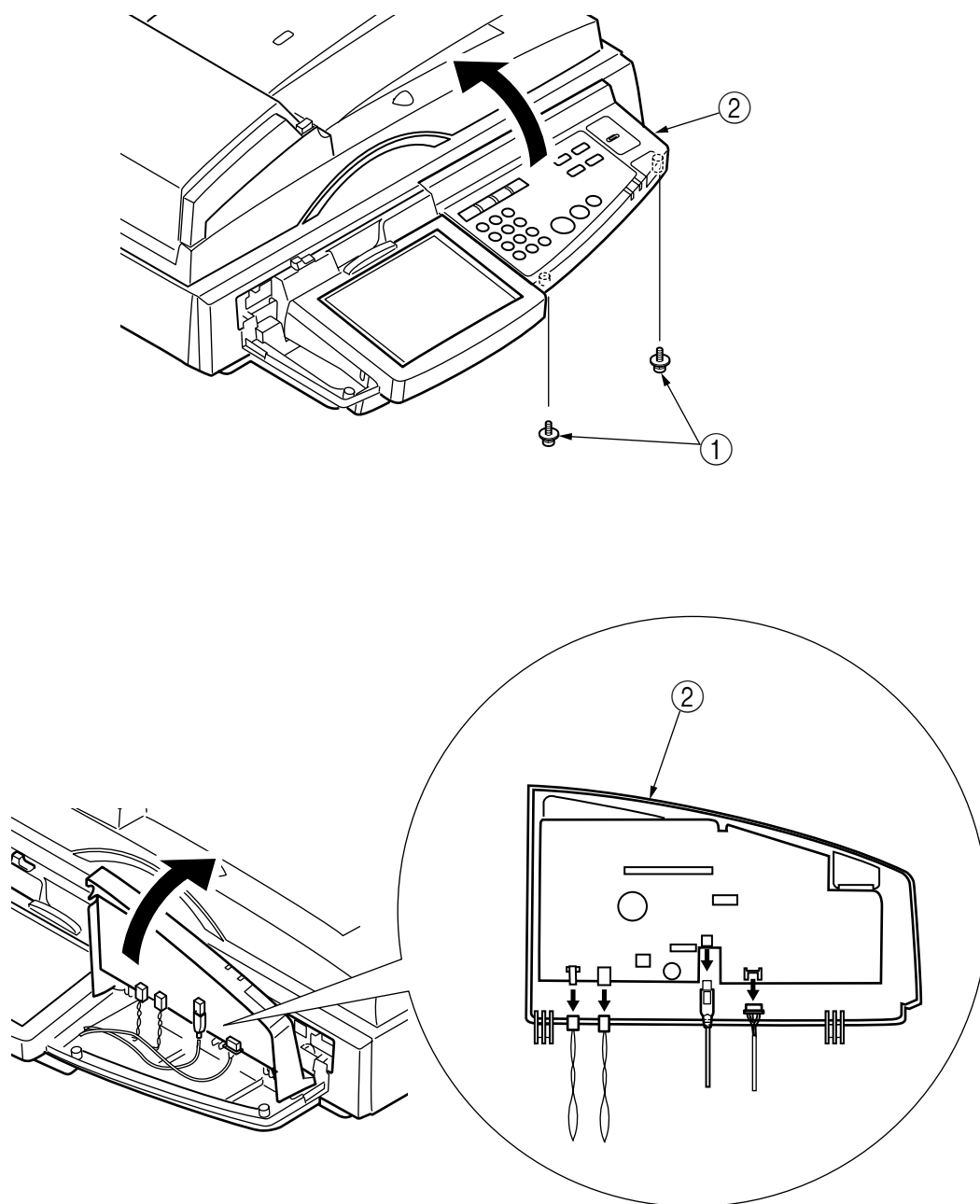
6.2.2.1 COVER PANEL LEFT ASS'Y

- (1) Take out the Screw① to remove COVER PANEL LEFT ASS'Y②.
- (2) Remove the Connector③.



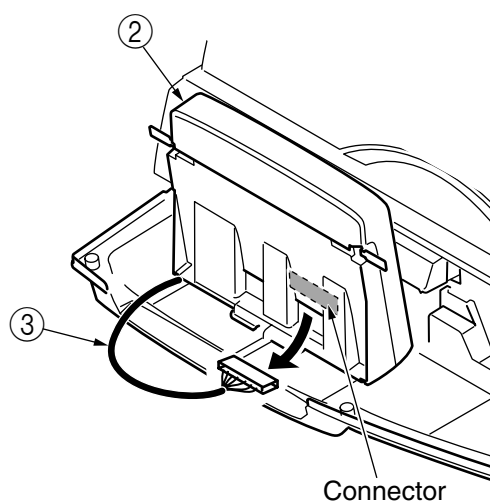
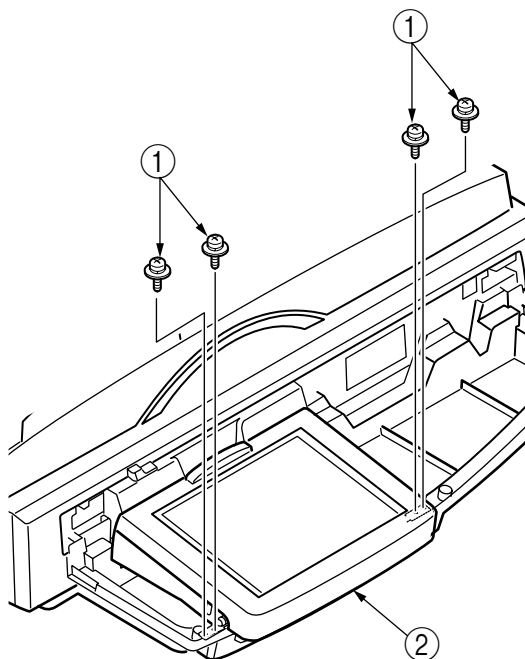
6.2.2.2 COVER PANEL RIGHT ASS'Y

- (1) Take out the Screws① to remove COVER PANEL RIGHT ASS'Y②.
- (2) Remove all Connectors.



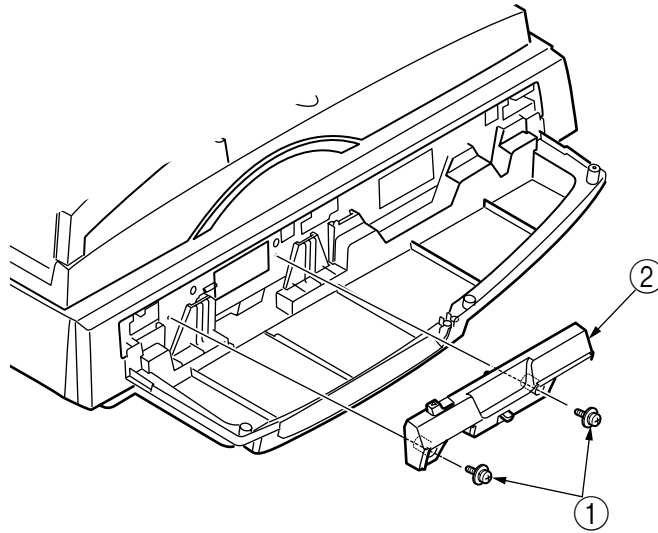
6.2.2.3 LCD ASS'Y

- (1) Refer to Section 6.2.2.1 and 6.2.2.2 to remove COVER PANEL RIGHT ASS'Y and COVER PANEL LEFT ASS'Y.
- (2) Take out the Screws① to remove LCD ASS'Y②.
- (3) Remove a Connector of the Cable③.



6.2.2.4 COVER SPACER PANEL ASS'Y

- (1) See from Section 6.2.2.1 to 6.2.2.3 to remove COVER PANEL RIGHT ASS'Y, COVER PANEL LEFT ASS'Y and LCD ASS'Y.
- (2) Take out the Screws① to remove COVER SPACER PANEL ASS'Y②.



6.2.2.5 ASS'Y MAIN BOARD

- (1) Refer to Section 6.2.1.8 to remove the ADF unit. Then, move FLATBED UNIT①.
- (2) Remove the Screws② and all Connectors.

